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MEMORIAL

TO THE

FIFTY-SECOND CONGRESS OF THE U. S.

IN FAVOR OF THE

IMPROVEMENT OF THE NAVIGATION
OF THE MISSISSIPPI RIVER.

ST. LOUIS, 1892.

ST. LOUIS, MO.

E. P. STODLEY & CO., PRINTERS, 211 NORTH MAIN STREET,
1892.



Louis.

MEMORIAL
 OF THE
 MERCHANTS' EXCHANGE,
 REPRESENTATIVES OF
 INDUSTRIAL BODIES
 AND
 THE MUNICIPAL GOVERNMENT
 OF
 SAINT LOUIS,
 TO THE
 Fifty-Second Congress of the United States
 IN FAVOR OF THE
 IMPROVEMENT OF THE NAVIGATION OF THE
 MISSISSIPPI RIVER.

A plea in favor of isolating the Mississippi River, and making it the
 subject of an Annual Appropriation of \$8,000,000 a year
 until it shall be permanently improved for
 safe and useful navigation.

PREPARED UNDER THE DIRECTION OF THE EXECUTIVE COMMITTEE

By D. M. GRISSOM.

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TO THE

Senate and House of Representatives

OF THE

UNITED STATES.

Your memorialists, the Executive Committee, of merchants, manufacturers and representatives of the municipal government of St. Louis, selected at a meeting called by the St. Louis Merchants' Exchange, to present to the Congress of the United States the interests of the people of the Mississippi Valley, in connection with their great river, and urge their claims for the general improvement of the navigation of that stream, beg leave respectfully to ask the attention of the National Legislature to the facts and considerations herewith submitted. The appropriations granted in the last twenty years, and expended in fragmentary and local improvements, have been of great benefit to navigation, in removing temporary obstructions and dangers, and deepening parts of the channel that had become clogged with bars and reefs, and increasing the depth of water, at low stage, over difficult short stretches. And it is the success of these local improvements and their manifest and admitted value to boatmen that suggest the wider, general system of improvement which it is the object of this memorial to press upon the intelligent and patriotic consideration of the National Legislature. We believe, and desire respectfully to represent that the time has come for something wiser and better than single appropriations which may be

large or small, sufficient or insufficient, accordingly as they are affected by the claims of localities, districts and States, in the usual river and harbor bills, and other exigencies of legislation on the subject. Such occasional appropriations may answer for short rivers, lying wholly in one or two States, which need improvement only at times, and for single harbors whose requirements are easily defined and met; but your memorialists would respectfully represent that they fall far short of meeting the needs of a river which runs past and through ten States, and which, with its tributaries, waters and drains, wholly or in part, more than one-half the States and Territories of the Union. What we pray for in behalf of the Mississippi river is an established policy of appropriations that recognizes the national character of the stream and takes it under the supervision and favor of Congress for a wisely conceived and effective system of improvement that shall be steadfastly maintained year after year, by a liberal scheme of expenditure, until the river shall become the potent, beneficent and useful agency of internal distribution which Providence designed it to be, and which it is capable of being made.

GROWTH OF THE VALLEY.

As long as the valley region was sparsely settled, with little surplus of products to send to the Atlantic States or to foreign countries, and with few wants beyond what the labor of its own population supplied, it was a matter of little concern whether the navigation of its chief river was easy or difficult; but in the last forty-five years, the States of Iowa, Wisconsin, Minnesota, Kansas, Nebraska, Colorado, North Dakota, South Dakota, Montana and Wyoming have been organized within its limits, to take their part in the work of developing a new civilization in the Western Hemisphere—and the pressing necessities of their vigorous, ambitious and increasing populations demand all the help that natural conditions and advantages, improved to the fullest capacity, can lend to the mighty task.

When the people of this valley contemplate the almost boundless

capacity for usefulness of their great river in the flood season, they instinctively turn to it as the very chief of these beneficent natural conditions, and recognize it, if not as their most powerful ally, as capable of being made so, in their competitive contest with the people of other lands engaged in similar vocations. Heretofore they have been content to allow it to take its chances with small streams, in the congressional legislation. But their needs have grown too urgent to be satisfied, longer, with such a policy of hazard, and they recognize also that their river possesses powers and attributes that entitle it to separate consideration and treatment. . An improvement of it is an improvement of every one of its affluents, because it is, in point of fact, a prolongation of each and every one of its affluents. The jetties at its mouth have benefitted the Red, the Ohio, the Tennessee, the Missouri and the Illinois; and the removal of a snag, or rock, or a deepening of the water on a difficult bar at any point between Cairo and New Orleans, extends relief all the way to Pittsburg, Florence, Shreveport, Little Rock. Nashville and Kansas City, and, indeed, into the interior of every one of the Valley States; and when your memorialists plead for the isolation of the great parent stream of the valley, for special friendly legislation, they are pleading for the rights and interests of all these States. We ask, therefore, that Congress recognize the necessity for a systematic, thorough and effective improvement of the Mississippi river from its source to its mouth, and vote an annual appropriation of \$8,000,000 per annum to be continued until the task shall be accomplished.

THE MISSISSIPPI VALLEY NOT A SECTION.

Perhaps it will be said this is asking a great deal for a work that is Western and sectional, and in which only a portion of the population of the country is concerned. But it may be suggested, in reply, that the time is past when it could be said, with any show of reason that the Mississippi is a Western river, and the vast valley it drains and waters is a section. What we have been accustomed to speak of as "the West" has ever been an undefinable and constantly receding region. In 1781, the mountaineers gathered from Southwest Virginia, East Tennessee, and the neighboring valleys of the Carolinas, who, under

Shelby, Sevier and Campbell, fought and won the battle of Kings' Mountain, called themselves "the Western Army." Seven years later, when the Northwestern Ordinance was enacted by Congress, the Northwest meant the territory north of the Ohio and east of the Mississippi, for, a foreign flag waved over the vast unknown region beyond. When this region was, by a magnificent stroke of policy added to the national domain, "the West" was recognized as including a few straggling settlements on the further side of the great river, and so, the ever advancing wave of migration and settlement has pushed "the West" further and still further onward, until the meaning of the term has become lost in its immensity.

And it is a distortion of words to call sectional the river which is the most conspicuous and interesting physical feature of the country, and which possesses more national attributes than any other feature whether coast line, mountain range, lake chain, or prairie. Even omitting the States and Territories watered by its tributaries, and limiting the consideration for the present to the States which abut on, or are divided by the Mississippi river alone, we have this showing:

MISSISSIPPI RIVER STATES.

	POPULATION.	
	1890	1880
Minnesota	1,300,000	780,000
Wisconsin	1,683,000	1,315,000
Iowa	1,906,000	1,624,000
Illinois	3,818,000	3,077,000
Missouri.....	2,677,000	2,168,000
Kentucky..	1,855,000	1,648,000
Tennessee	1,763,000	1,542,000
Arkansas	1,125,000	802,000
Mississippi	1,285,000	1,131,000
Louisiana.....	1,116,000	939,000
	18,528,000	14,026,000
Increase in the last decade.....		4,102,000
Percentage of increase.....		29.2

The Mississippi river States, then, are ten of the whole number of States, and have two-sevenths of the whole population of the coun-

try. But the tributaries of a great river are parts of it as truly as the limbs are parts of a tree, and that cannot be a fair or reasonable geographical or economical consideration of the subject which excludes them, particularly when it is remembered that before the era of railroads, all the commerce of the populations dwelling along the tributaries of the Mississippi flowed as easily and naturally into the great stream as the water itself. But when we extend the treatment so as to embrace all the States and Territories whose waters in whole, or in part, flow into the Mississippi, and pass into the ocean through its mouth, we have this result:

POPULATION OF THE MISSISSIPPI VALLEY STATES.

	1890.	1880.
Ohio	3,667,000	3,198,000
Indiana	2,189,000	1,978,000
Kentucky	1,855,000	1,648,000
Tennessee	1,763,000	1,542,000
Mississippi	1,285,000	1,131,000
Minnesota	1,300,000	780,000
Wisconsin	1,683,000	1,315,000
South Dakota	328,000	98,000
North Dakota	182,000	37,000
Iowa	1,906,000	1,624,000
Nebraska	1,057,000	452,000
Kansas	1,423,000	996,000
Arkansas	1,125,000	802,000
Louisiana	1,116,000	939,000
Oklahoma	61,000	.....
Indian Territory	68,000	76,000
Colorado	411,000	194,000
Montana	132,000	39,000
Wyoming	60,000	20,000
West Virginia	760,000	618,000
Illinois	3,818,000	3,077,000
Missouri	2,677,000	2,168,000
	28,236,000	23,330,000
Increase in the last decade		4,906,000
Percentage of increase		21

The region drained by the Mississippi and its tributaries embraces therefore twenty-two states, one-half the whole number, even excluding western Pennsylvania, northern Alabama and part of northern Texas, which might properly be included, and shows a population of 28,000,000, nearly one-half the entire population of the Union. The fertility and productiveness of its soil, and the variety

of its products, the abundance of its rain-fall, and its remarkable exemption from the drouths and blastings which produce famines in vast districts in older countries; its plentiful supply of running streams; its forests of white pine in the north and of yellow pine and hard woods in the south; the enormous yield of food products and materials for manufactures which it pours, year after year, into the channels of commerce, make it the favored home of an intelligent enterprising and happy people, and mark it as the future seat of empire in the new world. The great river which courses through its center flows from north to south, and yet is neither northern nor southern. It is both. It has its source in the icy lakes of upper Minnesota, and its mouth amid the sugar fields and orange groves of Louisiana. It presents 4,000 miles of coast line, and yet, at no point does it mark the boundary between our country and a foreign land. It is American and American only, every mile of its length, from head to source, and at no spot on its banks do Americans look across its majestic width and behold a strange land or an alien people.

Is it fair, in the presence of these demonstrations of the pre-eminent national character of the Mississippi, and the vast popular interests connected with, and in a greater or smaller measure dependent on it, to treat a proposition for the improvement of its navigation as local or sectional? Can the interests of the 28,000,000 of inhabitants who have their home in the valley of the great river, or even of the 18,000,000 inhabitants of the states abutting on it, be dwarfed by such a suggestion?

INTEREST OF THE INDUSTRIAL STATES IN THE SUBJECT.

But the improvement of the navigation of the great river of the continent is not a subject of exclusive concern to the population of the ten Mississippi river states, nor even of the population of the Mississippi Valley. The swarming communities of the northeastern industrial and commercial states and the less densely populated states of the southeast Atlantic coast have an interest in it scarcely inferior to that of the Central, West and South. For fifty years past the trade of the Mississippi Valley has been a prize for which the cities and states east of the Alleghanies have striven with each other in magnificent rivalry, and the thousands of millions of dollars they have

expended in building railroads into, and through it, and in cutting canals to cheapen and facilitate the flow of its traffic into their ports, attest their quick and intelligent appreciation of the value of that traffic, and of the profits that are to be found in the handling of it — and it is not too much to say that a large share of the wealth which the great cities of the Atlantic coast exhibit are the product of these profits. If there are three words that possess a livelier interest in the great commercial metropolis of the country, and round which the discussions and transactions on its exchanges converge with a vaster and deeper meaning, than any other three in the language, they are grain, cotton and stocks—the first two being the names of important farm products of the Mississippi Valley, and the third representing the railroads that have been built into and through it for the purpose of assisting to carry those products to the Atlantic states markets.

And this is not all. The Atlantic states have a still greater and more vital interest in the Mississippi Valley and the facile and cheap transportation of its products to the places of consumption than the handling, manipulating and dealing in them. The nine states of the northeast, classed in the census report as the North Atlantic division, are industrial states, and the vast system of diversified manufactures which the intelligence, skill and industry of their people have built up is a chief agency of employment to the thrifty and well paid laboring classes of their populations, and a chief source of their wealth.

But may it not be said that the intelligence, skill and industry of our fellow countrymen of that section would have been unequal to the task of building up this admirable system of manufactures, had not their efforts been reinforced by the advantages of raw cotton, wool, hides and other materials furnished by the Valley region, the cheap food for the support of their industrial communities supplied from it, and the ready and valuable home market for their products found in it, also: Of the \$2,790,000,000 Capital invested in manufactures in the United States in 1880, the nine industrial States had \$1,725,000,000; of the 2,732,000 persons employed in manufacturing, those States had 1,583,000; of the \$3,396,000,000 paid out for materials of manufacture, they paid \$1,975,000,000; and of the total manufact-

uring product of \$5,369,000,000, they turned out \$3,186,000,000. These nine States therefore, are the seat of three-fifths of the manufacturing interests of the country, and may well claim pre-eminence as the industrial section of the Union. When the full report of the Census of 1890 shall be given, it is probable these figures will be increased 60 to 75 per cent. A large part of their supply of raw cotton—22,000,000 bales—is drawn from the Southern Valley States, and a large part of their wool, hides and other material is drawn from the Valley region, also. And this dependence upon that region for the raw materials which feed their mills is not the only interest they have in the subject of cheap transportation in the Central West; their dependence upon it, also for the food that feeds their working classes and, indeed, their whole population, shows that they cannot afford to be indifferent to the vast economy of distribution that concerns their countrymen of the Valley. In table I in the appendix to this paper, is given the population of the nine industrial States in 1890, together with their yield of wheat, oats and corn for the year 1891, from which it will be seen that their population is 17,363,000, and their crop of wheat was 34,813,000 bushels. But this is only a trifle over two bushels per capita, for the population—one-third of the actual need. The per capita consumption of wheat finds its maximum in the North-east where it is about 6 bushels. This requires a supply of 104,178,000 bushels a year for those States, 34,813,000 bushels, or about one-third of which is raised on their own soil. The other two-thirds—69,365,000 bushels—is drawn from the Mississippi Valley, because it can be obtained there cheaper than anywhere else in the world. The consumption of corn in the country in the last ten years has ranged from 23 to 36 bushels per capita for the whole population; but the minimum is probably found in the North-eastern States, where it will be safe to put it at 15 bushels, requiring 260,445,000 bushels for their wants. As their own production is only 90,234,000 bushels they require to draw 180,000,000 bushels from those States that have a corn surplus to part with—and these States are all in the Mississippi Valley. A similar estimate for oats at 10 bushels per capita for the North-eastern States would require 173,630,000 bushels a year, 90,114,000 bushels of which is raised on their own soil, leaving

83,000,000 bushels to be drawn from the surplus yielding States of the Central West. Of these three cereals alone, therefore, the industrial States require 332,000,000 bushels a year, over and above what they produce, themselves, as food for man and feed for animals—and it may be said that it is no small advantage that they are able to draw it year after year, from the cheap sources of home production in the Central West, without being compelled to import it from foreign lands, or to divert to the production of it from their own soil, energies that are more profitably employed in manufacturing.

**THE MISSISSIPPI VALLEY THE CHIEF SUPPORTER OF OUR
FOREIGN COMMERCE.**

It has been stated that the task rests upon the agricultural states, chiefly those of the Mississippi Valley, not only of furnishing a food supply to the population of those states of the Atlantic slope engaged in manufacturing and commerce, which do not produce their own grain, meats and provisions, but of furnishing also the bulk of the exports sent abroad to pay for our imports. The official statistics prepared and published at Washington by the Government show how important this duty is, and how effectively it is performed. Our total foreign commerce for the fiscal year ending June 30, 1890, amounted in value to \$1,634,000,000—\$845,000,000 exports, and \$789,000,000 imports, showing a balance of trade in our favor of \$56,000,000; and of the exports, \$594,000,000 was made up of farm products—\$250,000,000 worth of cotton; \$154,000,000 of breadstuffs; \$136,000,000 of provisions, meat products and dairy products; \$33,000,000 of animals, and \$21,000,000 of tobacco.

The subjoined table, taken from the report of Mr. Dodge, statistician of the department of agriculture, for 1890, shows the proportion of our agricultural exports to the whole amount of our exports for 1889 and 1890.

	1889. Value.	1890. Value.
Animals and animal matter.....	\$126,586,103	\$175,986,750
Bread and breadstuffs.....	123,876,661	154,925,927
Cotton and cotton-seed oil.....	239,073,879	256,259,970
Miscellaneous products....	40,210,753	40,044,009
Total agricultural exports.....	529,747,396	627,216,656
Total exports.....	730,282,609	845,293,828
Per cent of agricultural matter...	72.5	74.2

Commenting on these figures, Mr. Dodge says:

"The official records of foreign trade for the fiscal year 1890 show an increase in the total exports from this country over last year of \$115,011,219, changing the balance of trade, which was against us in 1889 by \$14,849,043, to one in our favor of \$55,983,419. The importance of the farmer in our foreign commerce is emphasized by the fact that the product of his labor last year furnished 74.2 per cent. of our total shipment abroad, while 47.4 per cent. of our imports were of agricultural products. During 1889 the balance in favor of our farmers in this international exchange of farm products amounted to \$174,000,000, but the transactions of 1890 leave a still more gratifying balance on the credit side of the ledger amounting to \$253,000,000. This at least is the apparent balance, though the real difference is much less, for the value of exports includes transportation to seaboard, and that of imports is increased by the cost of sea and land transportation from foreign countries.

"The greater part of our increase in exports was made up of the increase in agricultural products, which amounted to \$97,000,000. More than one half of the increased demand was for animals and their products, the sale of cattle alone amounting to \$15,000,000 more than in the previous year. Beef products contributed \$7,000,000 to the increase, while our pork products, though partially barred from some countries, showed a still more striking increase, amounting to \$20,000,000.

"The shipments of breadstuffs showed an advance in value over the previous year of \$81,000,000, wheat contributing about one-half. An encouraging feature of this branch of the trade was the increase of \$10,000,000 in shipments of corn and \$4,000,000 in oats."

When it is reflected that to maintain this balance in our favor of \$56,000,000 in commercial interchange with foreign countries, our agricultural products have to pay the cost of carriage of over 4,000 miles, and compete in open markets with the similar products of all other countries, is it not reasonable that the Government should go to the limits of its obligation in facilitating and cheapening their cost?

RIVERS IN HISTORY.

It is interesting to reflect how intimately rivers have been associated with the history of peoples and empires. Ancient Egypt was so dependent on the Nile, that wonderful stream whose hidden source even the Egyptians themselves did not know, and which flows for a

thousand miles without a single tributary, that it may be said, if there had not been a Nile there would not have been an Egypt. The Babylonian empire had its seat on the Euphrates. The Ganges is so blended with the religion and social life of the swarming millions of Hindoos, that they call it the Sacred River. The Yang-tse-Kiang flows through the most fertile part of the Chinese Empire, and hundreds of thousands of people too poor to own a dwelling on the soil, find homes in cheap rafts on its hospitable bosom. The Rhine and the Danube are endeared to the people of Central Europe by an almost endless chain of heroic and tragic recollections. The yellow Tiber played its part in the history of ancient Rome, and the Thames and Seine, though insignificant in size, are famous for their association with the history of the two proudest capitals of the modern world. The Hudson, the Delaware, and the James have a warm place in the affections of the people of New York, Pennsylvania and Virginia; and may it not be said that when the seat of empire in the New World shall be established, as it surely will be in the Mississippi Valley, and that region becomes the home of a hundred million people, and the theatre of a tremendous new human drama, the mighty stream which flows through its centre will surpass in dignity and beneficence, and equal in its claim on popular affection any ancient or modern river on the globe?

RIVERS AND RAILROADS.

There is no warrant for the assertion that in this age of railroads, rivers have lost their fascination and influence over people, and that it is as easy to build up a great and populous city at a distance from navigable water as upon its shore. The history of settlements in this country, as well in the last forty years of railroad making, as in the one hundred and fifty that preceded it attests the continued ascendancy of navigable streams and lakes over the popular mind, and their great value in commercial, industrial and distributive economies. The same forces that located New York at the mouth of the Hudson, Philadelphia on the Delaware, Baltimore on the Patapsco, New Orleans and St. Louis on the Mississippi, Pittsburg, Cincinnati and Louisville on the Ohio, and Chicago and Milwaukee on Lake Michigan, before railroads were thought of, have assisted to build up

Minneapolis, St. Paul, Lacrosse, Winona, Dubuque, Davenport, Rock Island, Muscatine, Keokuk, Hannibal, Quincy, Cairo, Memphis and Vicksburg on the Mississippi, Evansville, Owensboro and Paducah on the Ohio, and Kansas City, Leavenworth, St. Joseph, Omaha, Council Bluffs, Sioux City, Pierre and Bismarck on the Missouri; and it may be observed that in the settlement of the newer portions of the Mississippi Valley in the last half century, it has ever been the rule to found the leading cities and towns on rivers and lakes, if there were rivers or lakes within reach, unless special agencies dictated a different location. And it is a fact not without significance that the cities, founded on the waterside, which were leading cities as far back as 1830, have maintained their pre-eminence in the face of railway influences, and are leading cities in 1892. Pittsburg, at the head of the Ohio, continues to be the largest city in Western Pennsylvania; Cincinnati on the Ohio and Cleveland on Lake Erie are the largest cities in Ohio; Chicago is the chief city of Illinois, St. Louis and Kansas City of Missouri, Louisville of Kentucky. St. Paul and Minneapolis of Minnesota, Omaha of Nebraska, Memphis and Nashville of Tennessee, Little Rock of Arkansas, Vicksburg of Mississippi and New Orleans, Shreveport and Baton Rouge of Louisiana—and there are good reasons for believing that these cities, all located on the waterside, will continue to maintain their ascendancy in their respective states for generations to come.

ADVANTAGE OF THE RIVER.

If it be objected that fifty million dollars is a very large sum to be expended in deepening the channel of a single river, it may be replied that five, or even ten times that sum ought not to stand in the way of securing a permanent advantage to the 28,000,000 population of the region watered and drained by that single river and its affluents. It would be impossible to estimate the value of this stream, even as it is with all its defects. It is worth a great deal for purposes of transportation even at its lowest stages, when there is a depth of only three to four feet on some of its bars, and when the navigation of it is attended by the greatest difficulties and dangers. The country could ill afford to do without it, even if it should shrink to a permanent depth of four feet

and no more. The fact that the chief part of our transportation traffic is performed by railroads, which, in some cases have taken away one-half, or three-fourths the business once performed by navigable streams, does not prove that navigable streams have had their day and gone out of use, and that water carriage has become, or is about to become obsolete; it proves only that the country has grown so great in population, wealth and diversified interests that it requires both railroads and rivers to meet the demands of its enormous interchange, and we could not dispense with either. In the main, railroads are built where no navigable streams exist, and are intended to supply the deficiency, and even where railroads run along, or adjacent to river banks, and lake shores, it is to accommodate the desire for rapid transit, or to take advantage of the periodical recurrence of low water in the streams, to divert their traffic. A report of the lumber receipts at St. Louis for the year 1891 shows that 15,840 more car loads of lumber were received by rail, in that year, than in 1890 — the explanation being that the Upper Mississippi was unusually low in 1891, and this forced the lumber from the pineries of Wisconsin and Minnesota to move by rail, and avoid the hazards and delays of difficult navigation. It needs no argument to prove that water carriage is the cheapest of all known methods of transportation; indeed, the fact is so well established and recognized that it may be asserted that if the country were favored with ten times as many permanently navigable streams, conveniently located between the districts of production and points of distribution, as it now has, it might have saved five billion of the ten billion dollars it has now invested in railways: and if there were four wide, deep and easily navigable rivers between the Mississippi and the Pacific ocean, along which vessels, propelled by steam or electricity at a rate of twenty miles an hour could pass, the several Pacific railways now traversing this region would never have been built, for, they would not have been needed — and the three hundred million dollars they have cost would have been spared for other purposes.

OUR INTERIOR TRAFFIC.

Perhaps it will be replied that this is supposing things that do not exist, and never can exist, and that a practical consideration of

the subject requires us to take things as we find them. Well, taking the situation as we find it, we have in the Mississippi Valley a great parent stream running from the northern to the southern boundaries of the country, and which, with its wonderful system of tributaries, affords 15,000 miles of navigable water lines—that is, navigable for portions of the year, and capable, the greater portion of them of being made navigable all the year round, except when frozen over. Suppose these streams had been made permanently navigable forty years ago—suppose the policy of improvement for the parent stream which your memorialists now pray for had been adopted in 1850, and extended to its chief affluents, so as to afford easy and safe navigation of them, the whole year round, except in the northern region, when frozen—would not a sufficient proportion of the \$4,000,000,000 expended in the construction and maintenance of 75,000 miles of railroad in the valley have been saved to pay the cost of the river improvement policy thrice over, to say nothing of the still greater sum that the population of the country would have saved in the diminished carrying rates on 100,000,000 tons of freight a year?

The report of the Interstate Commerce Commission for the year ending June 30, 1890, states that the railways of the country carried in that year 636,441,000 tons of freight and 492,000,000 passengers, and that they received for the service rendered over \$1,000,000,000, of which sum \$730,000,000 was for freight. If we add to this one-seventh for the estimated amount paid for water carriage, we have an aggregate of \$1,140,000,000 as the annual cost of the carrying service of the country. The figures exhibit the vast magnitude of our interior traffic, which, vast as it is, at the present rate of increase, doubles in sixteen and a half years; and they suggest that if there is a field that urgently invites measures of economy, it is the one covered by these colossal figures. The same official report states that the average cost of carrying freight for all the roads was .941 cents per ton a mile. This is \$11.29 for 1200 miles, the distance between St. Louis and Boston and between St. Louis and New Orleans. But the high water river rate from St. Louis to New Orleans in 1891 was only \$2.20 a ton for the entire distance—less than one-fifth the average rail charges for a similar service.

The very considerable influence of the countrys' interior water

lines of carriage in the economy of domestic distribution is strikingly attested by the reduction of carrying rates on the railroads. In 1868, it cost a bushel of wheat 42½ cents to go by rail from Chicago to New York; the rate by water (Lake and Canal) being 22½ cents. In 1874, it cost 28½ cents; the rate by water being 14 cents. In 1878, it cost 17½ cents; the rate by water being 9 cents. And in 1888, it cost 14½ cents; the rate by water being 6 cents. In 1868, the average rate charged on eighteen leading roads for carrying freight was 2.453 cents per ton per mile; in 1874 it was 1.75 cents; in 1878 it was 1.4 cents; in 1888 it was .974 of a cent; and in 1891 it was .941 of a cent.

The increase in the number of roads in the period indicated, and the sharp competition between them has no doubt had something to do with this steady reduction from nearly two and a half cents per ton per mile in 1868, to less than one cent per ton per mile in 1891. But the roads are not to be credited with the whole of it; an influence outside them has had no little to do in the matter, and that influence is the competition of the water lines. If there were no water lines in the country, if the North did not have its great chain of lakes with a current flowing from Wisconsin to New York, and the Mississippi Valley its great trunk river flowing from Minnesota to Louisiana with affluents pouring into it the waters of the Alleghanies on one side, and of the Rocky Mountains on the other, it is not probable the reduction of rail rates would have gone lower than the figures of 1878, 1.4 cents per ton per mile; and the country would have paid that rate, instead of .941 of a cent, on the 636,441,617 tons of freight carried in 1891. The difference estimated on the entire freight mileage (76,257,047,298) would have been \$342,000,000. That the country owes this saving on its interior freight traffic for a single year to the friendly protection of its water-ways is the opinion of all who have made the relation between water-ways and railways a subject of careful study. Indeed, intelligent railroad men themselves virtually admit it in their discussions of the question. Mr. King, President of the Erie Railroad, in his report to the bond and share holders, made September, 1890, says:

"It will be noted, that in common with nearly all the leading lines in the United States, your company made a very large increase in the gross earnings, *but the net results were much less satisfactory.*

These results have been caused by various circumstances, the leading one being the very low rates for the transportation of traffic, especially through freight.

"Your company was obliged to adopt the same rates upon through business as established by competing lines, although these rates were reduced to an unremunerative point and much lower than was necessary in view of the immense amount of freight offered.

"Some of the leading western lines insisted upon very low rates east bound in order to attract the business to the rail lines which otherwise would go by lake.

"The results expected by these companies were not realized. More business than usual went by the lake, and it was shown to be an absurdity to attempt to force even the lower classes of freight, by a reduction of rates, from the lakes and put it upon the rail lines, as long as navigation is open."

The report of the Superintendent of Public Works of New York for 1891 claims that the Lake and Canal competition has not only had a great deal to do with the Erie road's reduction of carrying rates from 1.526 cents per ton per mile in 1872 to .687 of a cent in 1890, but that it has forced the other great roads running to New York City to enlarge their freight cars, substitute steel for iron rails, straighten their curves, lower their grades, provide drop bottom cars for coal, and air-brakes for freight trains—all this at enormous expense, to enable them to maintain the contest with the single water line between Chicago and Duluth and New York City.

RAIL RATES AND WATER RATES.

A table, prepared by Mr. J. C. Brown, statistician of the New York Produce Exchange, shows that the average freight rate on wheat from Chicago to New York in 1890 was 5.85 cents a bushel by lake and canal, and 14.31 cents a bushel by rail—the water cost being \$1.94 a ton, and the rail cost \$4.77 per ton. That the rail cost between the two points should be less than one-half the average carrying rate for all the roads of the country is due to lake competition; and that, low as this rail cost is, the lake and canal cost for the same service is more than one-half lower still, affords a sharp conception of the great value of the lake line to the States of the North and Northwest—for they not only furnish a water carriage cheaper by

one-half than the lowest rail cost, but they force the rail cost down to one-half the general average for the whole country. It would be within the limits of a reasonable estimate to say that the sixteen feet of water all the way from Chicago to Buffalo saves to the people of those States, on freight charges, \$10,000,000 a year, if not double that sum—and it would not be unreasonable to say that an improvement of the Mississippi which would give the half of sixteen feet all the year round between St. Paul and St. Louis, and ten feet between St. Louis and the mouth would effect an annual saving quite as great.

And the people who live on and near the river would not be the only beneficiaries of this saving. The advantage would extend over, probably, the whole country east of the Rocky Mountains, for it is difficult to fix a limit to an effective cheapening process established on a single long line of carriage in a country where all the great lines constitute one sympathetic system. The Erie Canal in New York is only a little over 300 miles long, and yet Mr. Albert Fink, an eminent authority on the subject of railway transportation, testified before a special committee of the New York Legislature, that "the Erie Canal regulates the freight rates on all the railroads east of the Mississippi River, not only on those whose tracks run parallel with the canal, but upon those which run in an opposite direction." And Mr. Fink's statement is strongly fortified by the last report (1891) of Hon. Edward Hannan, Superintendent of Public Works of New York, as the following quotation from it shows:

"At no time in recent years has this fact been more clearly illustrated or made more apparent than during the season just closed. When the canals were opened in May last the pool rates on grain from Buffalo to New York were seven and four-fifths cents per bushel, while the canal rates were from two and five-eighths cents to three cents, and were increased in June to three and one-eighth cents. But the pool rates were not maintained. My information on that subject, which has been received from private sources, is that contracts were made by the various railways to carry this grain in the months of June, July and August for four cents per bushel; September, four and one-half, and October five cents, and all this time the pool rates remained unchanged, while the canal rates were: May, 2.51 cents; June, 2.53 cents; July, 2.68 cents; August, 3.94 cents; September, 4.19 cents; October, 4.44 cents, and November,

4.13 cents. The difference between the pool rates and the actual rates which have been charged by the railways, which is about three and three-quarter cents per bushel, is the amount which has been saved to the consumer by the canal, without regard to the amount carried by the canal. This saving has been made upon every bushel of Western grain that went to the port of New York during the season of canal navigation, whether it went by rail or by water. As the amount of grain received at the port of New York by all the various transportation routes from May first to December first, the time during which the canal was open, was 110,812,180 bushels, here is a saving of over four millions of dollars on the necessities of life alone. This sum was saved to the consumer by the canal, which would otherwise have gone to the railroads, and in this single service has the canal maintained its usefulness."

The Erie canal cost \$51,000,000, and the state expends \$720,000 a year in keeping it in repair; but if it effects a saving of over \$4,000,000 a year in freight charges on the wheat, alone, that goes into New York city, to say nothing of the five times greater weight of other freight going into and out of that city, the money was certainly well spent. The \$4,000,000 saving was not on the wheat that went into New York through the canal, but on all that went into the city by railroads also. Of the 110,812,000 bushels received in the city, only a little over one-fourth—30,846,641 bushels—was delivered through the canal; nevertheless, the canal cheapened the rate on the entire aggregate of receipts—the 80,000,000 bushels received from the railroads, as well as the 30,000,000 bushels received by the canal. It is not necessary, therefore, that a water line should carry the freight to cheapen the rate; it cheapens what it does not carry, as well as what it does. In short, it regulates rates on all lines of carriage that converge at a common point with it.

If the Erie canal can do this, what might not the Mississippi river do? If a small water line 300 miles in length, lying entirely in a single state, and accommodating only small boats of 240 tons burthen, drawn by horses, and running at the rate of three miles an hour—fifteen days from Buffalo to New York—can effect, and does effect a saving of \$4,000,000 a year on the wheat receipts alone, and probably five times as much on all the domestic receipts and shipments of New York city, what might we not expect of a wide and flowing

river, eight to ten feet deep all the year round, two thousand miles in length, running past ten states, and accommodating boats of 3,000 tons burthen and running at the rate of ten to twelve miles an hour?

NO DEFICIENCY OF WATER IN THE MISSISSIPPI.

So much has been written and said on the subject of the destruction of forests in the Central West and round the headwaters of the Mississippi, and the effect of it on the rainfall, that it may be thought by persons not familiar with the river that there is a deficient supply of water for purposes of navigation in its channel, at certain seasons of the year, and the problem of improvement involves the construction of vast storage reservoirs for preserving the excess of water that runs to waste in the spring. Fortunately, no such difficulty complicates the task. There is an ample supply of water in the river, every day in the year, for purposes of navigation, if it were restricted to a narrowed channel; but in the low season, this water is spread over a width of three-eighths to three-quarters of a mile, affording a depth of only four or five feet, when, if it were forced into a channel half as wide, there would be a sufficient depth for easy and safe navigation. And all the judiciously executed local works for removing bars and reefs at points where they presented the greatest obstruction to boats demonstrate the practicability of this system of improvement. On the Upper Mississippi above Keokuk, stretches of river that once had a low water depth of three feet, and, in some cases, of only two feet, have had the chief body of water thrown into narrower channels, by means of wing dams, with the result of having the depth increased to three and four feet. The river itself is made to assist in the work, and where it is given fair play, it never fails to perform its share of the task, by scouring out a deeper channel, and removing the sand deposit that presents the impediment to navigation.

It is not the province of your memorialists to tell how the general improvement they pray for shall be effected. The government engineers who have been engaged in planning and executing the valuable local works of the last twelve years and have made the hydraulics of the river the subject of careful study and experiment, would, no doubt, be successful in applying to the whole river the methods that

have been effective in parts—and to their hands we are content to entrust the work. That is a great task we do not pretend to deny. Indeed, we cheerfully admit it. But this is a day of great enterprises, and the very magnitude, cost and difficulties which they sometimes present are only a provocation to the daring courage, skill and force of a civilization that is filling the earth with its achievements. Besides it may be pardonable to say that if the proposed improvement is a great work, the river to be improved is a great river, the area it drains is a great country, and the people who dwell in it would not be content to be considered anything less than a great people.

THE QUESTION OF FREIGHT RATES IN THE WEST.

The subject of freight rates, always one of concern to the Agricultural West, because of the high percentage which those rates are upon the price of the cheap and bulky products of its farms, has increased in intensity of interest in the last twenty years through the steady westward movement of the centre of the grain surplus production. The virtual abandonment of grain raising in the densely populated states of the Atlantic coast and the substitution for it of market gardening, dairying, fruit culture and special farming has imposed on the Mississippi Valley states the task of not only supplying the populations of the Atlantic slope with cereals and meats, but furnishing for export also, the farm products that are required to pay for our imports, and maintain the balance of trade in our favor. The task becomes more difficult the further the centre of grain surplus production moves westward, because it costs the grain raiser more to send his surplus to the point of consumption. The grain must carry itself to market, or pay its way, which amounts to the same thing; and if it starts from the centre of Iowa, Missouri, Nebraska, or Kansas, the cost is greater than if it starts from the centre of Indiana or Illinois. This is the explanation of the deeper concern in the subject of freight rates exhibited by the people of the Trans-Mississippi Agricultural states than by those of Valley states lying east of that river. Fifteen years ago railroad freight rates were the subject of a convulsive popular excitement in Illinois and Wisconsin, and what is called the Granger railroad legislation was the product of it.

THE TRANS-MISSISSIPPI STATES.

But the centre of the freight rate feeling moves steadily and faithfully in the track of the center of grain surplus production, and close behind it—and so, the popular interest in this question has crossed the Mississippi from Illinois and Wisconsin, and is now to be found in Minnesota, Iowa, Nebraska, and Kansas, where the same loud and vehement demand for legislative limitation of railway carrying rates are heard, that were heard in the eastern Mississippi States twelve years ago. If these demands are not always reasonable and fair—if sometimes they are unreasonable and violent, and involve unwise restrictions of the liberty of action of the railways—let it be remembered in extenuation, that the rate on a bushel of grain may be, if not a question of life and death, at least a question of solvency or bankruptcy to a farmer in Iowa or Nebraska. Railroad rates which are incessantly talked about, in the Mississippi region, and particularly in the trans-Mississippi region, are seldom heard of east of the Alleghanies—and the reason is that while they are a heavy percentage on the value of the products the Valley farmer sends to market, they constitute an almost imperceptible percentage on what the Eastern manufacturer sends to market. The Valley States are agricultural, the north Atlantic States are industrial. A car load of farm products may have only one-tenth the value of a car load of factory products, and while a difference of five cents a hundred in carrying rates may be a matter of little significance to a ton of manufactures worth \$5,000 or \$10,000 it is a very serious business to a ton of grain worth on the farm where it was raised only \$18 or even on a ton of cotton worth \$160. At the late meeting of the Illinois State Grange, on the 8th of December, 1891, the Grand-master stated, in his formal opening address, that the wheat crops of that State had been raised for the last eighteen years, at an actual loss to the raisers—and if this is true of a rich agricultural State lying on the east side of the Mississippi, we have no warrant for looking for a better condition on the west side. Indeed, the condition on the west side may be inferred from the public statements of the governor of Iowa, that corn and wheat have not paid the cost of raising them in that State, for several years past, and from the

additional well known fact that when the corn crop is a full one in Kansas and Nebraska, the least disadvantageous method known to farmers in certain districts of disposing of it is to burn it for fuel.

A table prepared by J. R. Dodge, statistician of the Department of Agriculture at Washington, giving the export prices of corn and wheat for a number of years, affords an explanation or partial explanation, at least, of the hard conditions of Western agriculture hinted at in these discouraging statements. It shows that the export prices of corn declined from 56 cents a bushel in 1878 to 47 cents in 1889, and of wheat from \$1.12 a bushel in 1874 to 88 cents in 1889.

Another table published in the Statistical Abstract of the United States shows that the wholesale price of dressed carcasses of beef in the New York market declined from 8 to 10 cents per pound in 1886 to 5½ to 7¼ cents in 1890.

Another table published in the same official book shows that the price of medium wool declined from 55 cents a pound in 1880 to 37 cents in 1890. And a table published in the Abstract, giving the range of cotton prices for a period of years, shows that it declined from 15.46 cents a pound in 1875 to 10 cents in 1888.

The subjoined table gives the population and wheat and corn crops of the seven trans-Mississippi States, North Dakota, South Dakota, Minnesota, Iowa, Nebraska, Kansas and Missouri, together with the quantities required for consumption by their own populations, and the surplus they have to sell:

WHEAT CROP OF SEVEN TRANS-MISSISSIPPI STATES IN 1891.

	POPULATION.	WHEAT. BUSHELS.
North Dakota.....	182,000	52,105,000
South Dakota.....	328,000	29,714,000
Minnesota.....	1,300,000	55,333,000
Iowa.....	1,907,000	27,586,000
Nebraska.....	1,056,000	18,080,000
Kansas.....	1,423,000	54,866,000
Missouri.....	2,677,000	25,732,000
	8,873,000	263,416,000
Total Crop.....		263,416,000
Needed for home supply.....		44,865,000
Surplus.....		219,051,000

CORN SUPPLY OF FOUR TRANS-MISSISSIPPI STATES IN 1891.

	BUSHEL.
Iowa.....	351,000,000
Nebraska.....	167,000,000
Kansas.....	142,000,000
Missouri.....	203,000,000
Total Crop	863,000,000
Needed for home use.....	529,725,000
Surplus	333,275,000

In these tables, the wheat consumption per capita is placed at five bushels, which is one bushel lower than the estimated consumption per capita in the northeastern industrial states, where wheat is used almost exclusively for bread; and the corn consumption is estimated at seventy-five bushels per capita, which is more than twice the average for the whole country. Of course, when corn is abundant and cheap, the farmers of the corn-growing states will use a great deal more than seventy-five bushels per capita in feeding it to cattle and hogs; but the cattle and hogs will be sent to market, which is only disposing of the surplus grain in another form.

It will be seen that the four states, Iowa, Nebraska, Kansas and Missouri had 333,275,000 bushels of corn, of the crop of 1891 to spare, and the seven trans-Mississippi states, North Dakota, South Dakota, Minnesota, Iowa, Nebraska, Kansas and Missouri, had 219,051,000 bushels of wheat, of the crop of the same year, to spare, making an aggregate of over 15,000,000 tons of grain that would find their way to the eastern and southern centres of consumption, or to Europe, from these states alone. The wheat requirements of the nine industrial states of the northeast are 69,365,000 bushels, and their corn needs are 180,000,000 bushels per annum. The seven trans-Mississippi grain-growing states could, therefore, supply the nine populous industrial states with all the wheat they require, and still have two-thirds of their surplus left; and four of these trans-Mississippi states could supply the 17,000,000 population of the industrial section with all the corn they require for food and feed, and still have 153,000,000 bushels to spare.

The entire wheat crop of the country in 1891 was 612,000,000, and the entire corn crop 2,000,000,000 bushels; and seven trans-Mississippi

States, Minnesota, North Dakota, South Dakota, Iowa, Nebraska, Kansas and Missouri contributed 264,000,000 bushels of wheat, and four of them, Iowa, Nebraska, Kansas and Missouri, contributed 863,000,000 bushels of corn, so that more than two-fifths of the entire wheat crop of the country is raised in the seven grain-growing States west of the Mississippi, and more than two-fifths of the entire corn crop is produced in four of these seven.

And even this large proportion of the total product of these two leading cereal crops contributed by the grain-growing trans-Mississippi States, three of them abutting on that river, and the other four abutting on and intersected by its largest tributary, does not fully exhibit their vital interest in the question of carrying rates. If all the wheat raised in Iowa were consumed in Iowa, as all the wheat produced in Pennsylvania, is consumed in Pennsylvania, the people of Iowa would not care, particularly, whether the carrying rates on their produce were a few cents a hundred higher, or lower; but when two out of every three bushels of wheat raised in Iowa, and seventeen out of every eighteen raised in South Dakota have to go twelve hundred miles to a point of consumption, and pay the expenses of the journey, it is easy to see that the expenses of the journey, or, in plain words, the cost of carriage, becomes a matter of supreme importance. Of the 263,416,000 bushels of wheat produced by the seven grain-growing States west of the Mississippi, their populations have need for only 45,000,000—so that 219,000,000 bushels, or nearly seven out of every eight, must go to the Atlantic States, or to Europe to find a market; and of the 863,000,000 bushels of corn raised in four of those States, 333,000,000 bushels, either in the raw state or in the form of live animals, meats, provisions and dairy products, must perform the same task.

FARM ANIMALS.

Table IV in the appendix exhibits the total number of farm animals—horses, mules, milch cows, oxen and other cattle, sheep and swine in the country on the first of January, 1890. The number of horses was 14,213,000—more than one-half, 8,820,000, being in the Mississippi Valley states; the number of mules was 2,331,000—more than one-half, 1,200,000, being in those states; the number of

milch cows was 15,952,000, more than one-half — 9,000,000 — being in those states; the number of oxen and other cattle was 36,800,000, more than one-half—19,000,000—being in those states; the number of hogs was 51,600,000, more than three-fifths—38,000,000—being in those states, and the number of sheep was 44,336,000, nearly one-half—19,500,000—being in those states. If Texas and California, in both of which sheep raising is a specialty and an unusually large interest, be taken out of the aggregate and combined in a separate class by themselves, the figures for horses will be: Mississippi Valley states and territories, 8,820,000; Texas, 1,300,000; all other states and territories, 4,100,000. For oxen and other cattle, they will be: Mississippi Valley states and territories, 19,000,000; Texas, 7,000,000; all other states and territories, 10,800,000, and for sheep they will be: Mississippi Valley states, 19,600,000; Texas and California, 8,700,000; all other states and territories, 16,000,000. There are, therefore, twice as many horses in the Mississippi Valley as in all the rest of the country, Texas being excluded; there are twice as many oxen and other cattle in the Mississippi Valley as in the rest of the country. Texas being excluded; there are a fifth more sheep in the Mississippi Valley than in the rest of the country, Texas and California being excluded. It appears further, that one-third the number of horses in the country, one-third the number of oxen and other cattle, a little less than one-third the number of hogs, and nearly one-fourth the number of sheep are to be found in the trans-Mississippi Valley states and territories.

OUR FARM PRODUCT AND THE FREIGHT TAX ON IT.

It is impossible to exaggerate the important bearing of these figures on the chief subject of this memorial—the imperative need of an improvement of the navigation of the great parent stream of the Central West that will facilitate, expedite and cheapen the transportation of the products of its valley, from the places where they are raised to the distant points where they must be consumed. It may be roughly stated that, taking no account of the product of mines, quarries, mills and factories, the farms alone of the Valley region can, and under the encouragement of fair prices do, pour into the currents of distributive movement 150,000,000 tons of products,

worth \$2,500,000,000, a year. The cereal crop of the country has increased, since 1879, from 2,437,000,000 bushels to 3,500,000,000 bushels; the cotton crop from 5,755,000 bales to 8,674,000 bales; the number of head of live stock from 130,000,000 to 172,000,000; and the hay crop from 35,000,000 tons to 50,000,000 tons—the increases ranging from 30 to 60 per cent.; and when it is remembered that the center of greatest production which, in 1879, was east of the Mississippi, has crossed that river, and is now 600 miles further from the Atlantic coast, the continued popular disquiet in connection with the rates of transportation, that has prevailed in the West for fifteen years, is no mystery, but a very intelligible phenomenon. There is no freight rate question east of the Allegheny mountains; but there would be, if it cost the manufactures of that region 10 to 30 per cent. on their selling price to get them to market.

The manufacturing product of the country in 1879 was returned in the census report at a value of \$5,369,579,000, and in view of the amazing industrial development of the last decade, it is now estimated at \$8,000,000,000. If agricultural products had increased as much in value as in quantity, in the decade, the estimated value of all farm products, as returned by the census of 1880, \$2,313,000,000, ought to be for 1890 \$3,000,000,000. But, unfortunately, the last decade was a period of low prices for farm products, and it is probable their value for 1890 will not be estimated by the Census higher than \$2,500,000,000. The quantity has increased 40 per cent., but the value only 15 per cent., and in the same period the value of the country's manufacturing product has increased over 50 per cent. It is a fact of some significance that the producers of farm crops in the West are not concerned about freight tariffs on what they buy; it is freight tariffs on what they sell that affect them, and the explanation is simple—the cost of carriage on the manufactures and merchandise sent to them may not amount to more than 1 or 2 per cent. of its value, but the cost of sending their crops to distant points of consumption will be 10, 20, and in the case of the cheapest kinds of grain shipped from the trans-Mississippi States, 50 to 70 per cent. of the farm value.

While valuable merchandise is little affected by a few cents per hundred in the price of transportation, cheap and bulky commodi-

ties are so seriously affected as to make it a question at times, whether they shall move at all or not. Ore, coal and iron must be carried at very low prices, or not be carried at all—and yet, ore, coal and iron are the indispensable raw materials for vast systems of industries that afford employment and livelihood to dense communities of workers. A grade higher than these rank building materials, stone, brick, lumber, timber, sand and clay, cheap in price, but of immense importance in a new country like ours, in which new cities and towns are to be built and old ones rebuilt. In France and parts of Germany the necessity for the cheap carriage of these heavy materials is so keenly appreciated that canals leading from the districts of supply in the direction of the large cities have been and are still being constructed to furnish it, and it is considered that a city possessing special facilities for water transportation of building materials enjoys no small advantage over its rivals. Rivers and streams, so insignificant as hardly to deserve the name of rivers, have become invested with a new value and importance, and no expense of improving the navigation of them is considered too great, if only it promises to facilitate intercourse and reduce the cost of transportation on articles which can hardly afford to be carried by rail.

It is a fact, not without an important bearing on this part of the argument, that there is no hard rock on or near the bank of the Lower Mississippi below Hickman, Ky., and this necessitates the transporting of that material from points at great distances. All the rock used in building the jetties at the mouth of the river was carried from points above Cairo, and the rock used now in the improvement work on the Lower Mississippi is obtained from quarries in Missouri, between Cairo and St. Louis. Nearly all the coal used on the lower river also comes from Pittsburg and other points on the Ohio.

Our Consul at Mannheim, Germany, Mr. G. C. Monaghan, reports to the State, under date of December 2, 1889, that there had been expended in the improvement of the Rhine altogether \$40,000,000—and this on a stream navigable for only 300 miles; and German-American citizens who have revisited their native land, after an absence of twenty-five years, express their surprise at seeing a river

which, in their youth, had little traffic and few boats now alive with craft and become the medium of a large and useful business.

AN AGE OF CHEAPENING.

This is an age of cheapening. While all the enormous energies of modern civilization are tasking in a greater measure than ever before, the secret forces of nature to the production, not only of the necessities of life, but of the comforts, solaces and luxuries that mitigate its hardships, and multiply its enjoyments—its quick, sharp and untiring inventive powers are equally busy in devising processes for reducing the prices of all material good things, so as to increase the consumption of them by placing them within reach of the masses of the earth's population. And this cheapening spirit is so imperative and irresistible that it staggers at no cost of agencies and enterprises that promise to promote its object. Millions and hundreds of millions are expended on schemes for shortening the hours, or distances of transit, diminishing tolls, charges and commissions, and reducing rates of carriage. The Suez Canal constructed at a cost of \$100,000,000; the Panama Canal project, upon which \$400,000,000 has been expended, and, perhaps wasted; the Nicaragua Canal now being cut at an estimated cost of \$200,000,000 to supersede the Panama project; the wide and deep ship canal which the city of Manchester, England, is constructing at a cost of \$50,000,000 to the sea; the great ocean steamers costing \$2,000,000 each, plying between the widely separated ports of the globe; the constant remodeling of mills and factories and the substitution in them of ponderous and expensive improved machinery for the less effective processes of twenty, and even ten years ago—all these are features of a cheapening tendency that would enable the masses of the people to buy more with their earnings; and may not your memorialists claim that their petition is fortified by the whole force of this enlightened and benign policy, and that the improvement of the great parent river of the Valley would only be in the direct line of movement with the civilization of the age?

Is it asking too much for the agricultural states of this region which enable the masses of our population to live cheaper and better than the masses of any other country on the globe, and which supply our

cotton mills with the cheapest and best material in the world, that Congress make their task easier and lighter by a work that will diminish the cost of sending their food surplus to the mouths that consume it? Would it not be in harmony with what, for thirty odd years has been the governing policy of the country, the settlement and development of the interior, the building up of home industries, the opening of farms and the stimulation of agricultural production in the West, the opening of mines, and the multiplication of the means of distributing the surplus products of each section to all others?

We are a nation of enormous producers, and we are a nation of enormous consumers, at the same time. The average per capita consumption of meat in the United States is probably not less than 175 pounds per annum. Of other civilized nations only Great Britain exceeds 100, and many of them scarcely average fifty pounds. The consumption of the cereals, by man and beast, is three times as much, in proportion to population, as in Europe. For the past ten years the average has been 45 bushels for each unit of population, while the usual European consumption does not vary greatly from 16 bushels per annum. While all is not used as food for man, no small part of it contributes to the meat supply.

The average consumption of wheat for bread is nearly 5 bushels, and about 3 bushels of maize and 1 bushel of oats and rye, or approximately nine bushels for each inhabitant. The average European consumption of wheat is about 3.5 bushels.

There is no other people on the earth comparable to us in these respects. Given a good paying price somewhat above the average for any staple farm crop, or any line of manufactures, and there is hardly a limit to be placed on our production of them; and given good prices for the farm crops of the Mississippi Valley, and there is hardly a limit to the capacity of its population to consume the necessities, comforts and luxuries produced by the manufacturing and mining vocations. It is this great capacity of our people for both production and consumption that explains our vast business of interior distribution—a business that has forced the building of 110,000 miles of railway, at a cost of \$4,000,000,000 between 1871 and 1891, more than one-half this mileage 58,000 being in the Mississippi Valley states, and which expressed in the interior traffic of the country, is estimated at \$30,000,000,000.

THE COST AND THE SAVING.

No doubt, in considering the subject presented in this memorial, it will be asked: Is the object practically worth the price to be paid for it? Will the investment of fifty million dollars in the improvement of the Mississippi River ever yield substantial returns proportionate to the expenditure?

These questions are reasonable and fair, and deserve a reasonable and fair consideration. Your memorialists do not ask for the adoption of the policy herein proposed for mere reasons of geography, locality or sentiment; nor do they present themselves in the attitude of claimants for their lawful share in a distribution of public money on the ground that it ought to recognize all sections and localities alike, and allot to each its due proportion. They base their prayer on higher and broader consideration—the welfare of a region so large as to exempt it from the name of locality, and a population so great as to exempt it from the imputation of sectionalism. That region embraces many localities—an East and a West—a North and a South; and its population, nearly one-half that of the entire country, is distributed among one-half the States of the Union. And in answer to the questions asked above, these counter questions may properly be asked: Can the country afford *not* to have the Mississippi improved? Can it afford to allow its largest river remain clogged and fretted with reefs, bars and other impediments which repel the traffic it ought to carry, and force that traffic to pay carrying rates one-third to one-half greater than would be paid on an unobstructed river? Is it either wise or expedient to keep a Missouri or Iowa farmer under the necessity, whenever he sends a bushel of wheat to market to send an additional third of a bushel along to pay the cost of carriage, by rail, when, with easy and cheaper water carriage this cost might be reduced one-half?

WILL IT PAY?

For a direct answer to the question: Will it pay to improve the navigation of the Mississippi at a cost of fifty or twice fifty million dollars? it will be necessary to resort to estimates which, while they may not be strictly correct, are reasonable enough to guide us to a safe

opinion. Fortunately, the subject is not wholly one of vague conjecture. We are not altogether in the dark as to what effect river improvement would have on interior traffic, for, we have a notable and instructive example of what effect river improvement at a single point has had upon interior traffic. Fifteen years ago one of the mouths of the Mississippi which was, and for years had been clogged with bars, was deepened, or, rather, was made to deepen itself by means of jetties which increased an uncertain depth of seventeen feet to a permanent depth of thirty feet, allowing large vessels to take out cargoes twice as large as those which smaller vessels had been accustomed to take out from New Orleans before. The effect was a large increase in the exports of Mississippi Valley products from that city, and a lowering both of carrying and insurance rates. Before the jetties were constructed, the shipments of grain from St. Louis to New Orleans for export to Europe were only about 500,000 bushels a year; now, they are 18,000,000 bushels a year, and steadily increasing. Here is a basis for a simple and easy estimate. If this 18,000,000 bushels of grain did not go to Europe by water to New Orleans, it would have to go by rail to New York. But it appears from the Annual Statement of the Trade and Commerce of St. Louis, made by Mr. Geo. H. Morgan, Secretary of the Merchants' Exchange of St. Louis, for 1890, that the average freight rate on wheat per bushel from St. Louis to Liverpool via river to New Orleans was 14½ cents, and by rail to New York 21½ cents—a difference of 7 cents in favor of the river route.

This difference, estimated on the 18,000,000 bushels exported from St. Louis alone, is \$1,260,000. The cost of the jetties was \$5,000,000. It may be said, therefore, that the river, with all its defects above the mouth, but with the jetty improvement at its mouth, saves to the producers of 18,000,000 bushels of Western grain enough money every three years to pay for the jetties. But the trans-Mississippi agricultural States alone have an annual wheat surplus of 219,000,000 bushels to ship somewhere, and our exports of grain in 1890 were 230,000,000 bushels, and for 1891 were probably 300,000,000 bushels. Of course it cannot be claimed that all this grain, nor even the half of it, would go down the Mississippi to be exported from New Orleans, even if the river navigation were as easy, safe and cheap as

your memorialists could wish to see it; but it *may* be claimed that one-half of it would be affected by an improved navigation which would force the railroads to lower their rates to meet the water competition. If this lowering of rates on only one-half the quantity of grain we export, whether it goes by river to New Orleans or by rail to Atlantic ports, should average only 3 cents a bushel—and there are good reasons for believing it would be twice as much—we have a saving of \$6,900,000 a year. But this saving would come out of only a small portion of the large bulk of farm products the Valley States send to market—one-half the grain surplus they export to foreign countries. It has been shown that the nine manufacturing States require 70,000,000 bushels of wheat, and 180,000,000 bushels of corn from the Valley region, and it would be a reasonable estimate which placed the shipment of grain—wheat, flour, corn, meal, and oats—from the grain surplus producing States to the other States, at 800,000,000 bushels, which is less than one-fourth the product of the grain-growing States in 1890. If only one-half this should be affected by an improved navigation that would reduce the average carrying rates 3 cents a bushel, we have another saving of \$12,000,000, making, with the \$6,900,000 saved on the quantity exported, \$18,900,000 a year on the grain crop of the Valley.

A STILL GREATER SAVING.

But grain is only one of several kinds of surplus produced in the Valley region, to be moved by water and rail to market. The cotton crop of the region is 3,000,000 bales, on which the saving would probably be 25 cents a bale, or \$750,000 on the whole. The number of farm animals and the quantity of meats and meat products of all kinds that are carried in the country, and that would therefore come within the cheapening range of rates, it is difficult to estimate; but as our exports alone of beeves and beef, in the year 1889-90, were nearly 1,000,000 head, all carried over the Valley region; and as our home consumption of cattle, hogs and sheep is 175 pounds per capita, or 5,425,000 tons per annum, seven-eighths of which is produced in the Valley States, and must, therefore, move through the Valley region for long distances, in one direction or another, it will not be unreasonable to say that there would be a saving of \$2,500,000

under this head. The whole freight traffic on the Upper Mississippi in 1890, according to Maj. Mackenzie, the engineer in charge of the improvements on that section of the river, was 4,400,000 tons, of which probably 3,000,000 tons consisted of lumber and logs. The saving on this traffic would be cheaply estimated at 50 cents a ton, or \$2,400,000 for the whole. Adding these sums together, we have the following as the saving in freight rates on the leading products of the Valley region, which an improvement of the navigation of its parent river would insure:

On grain.....	\$18,900,000
On cotton....	750,000
On animals, meats and meat products.....	2,500,000
On Upper Mississippi traffic.....	2,400,000
Total.....	<u>\$24,550,000</u>

If it be said that this estimate proves too much—that the result is so large as to refute itself, it may be replied that no account is taken of 250,000 tons of tobacco and 150,000 tons of sugar produced and transported in the Valley region; of the hay, potatoes and other minor crops; of dairy products, wool and hides; of the large lumber traffic of the lower Mississippi, and its tributaries; of the coal, ore, lead, iron and other products of mines; nor of the imports into the Valley received and distributed in exchange for its exports.

The Census figures of 1890 giving the number of tons of freight carried on the Mississippi and its tributaries in the year 1889, show that of the aggregate, 31,000,000 tons, more than twenty-nine parts (29,600,000 tons) were made up of coal, forest products, merchandise, iron ore, stone gravel, clay and sand, which are not included in the estimate, and all of which, by reason of their cheapness and heavy nature, are not less interested than farm products, in cheap carriage.

MANUFACTURES OF THE VALLEY STATES.

It will be observed too, that the manufactures of the Valley States are excluded, although they would constitute a very important item in a perfect exhibit of the freight aggregate of those States. The total product of manufactures of the Valley States in 1880 was valued at \$1,700,000,000—and it is well known that there has been a

very large increase since then. How great, we do not know, and have no means of accurately estimating at the present writing, as the census figures of manufactures for 1890 have not yet been given out; but statistics of St. Louis industries presented by Superintendent Porter in a speech made in that city, November 21, 1891, indicate that its manufacturing product nearly doubled in value between 1880 and 1890—the increase being from \$114,333,000 to \$213,199,000; and as there are good reasons for believing that Pittsburg, Cincinnati, Louisville, Chicago, Minneapolis, Kansas City, Omaha, Denver, Memphis, New Orleans and the other large cities and towns in the valley have made a similar, some of them a greater industrial development, it will be within limits to estimate that the total increase in the Valley States was 50 per cent, at least, making the value of the manufacturing product of those States for 1890, \$2,250,000,000. There is no reliable process of converting this aggregate of values into tons; but it is easy to comprehend that two thousand million dollars worth of manufactures, consisting chiefly of metal, wood, leather, glass, clay and other heavy materials, must make an enormous mass of freight; and if to it we add the manufactures from the Atlantic States and foreign countries brought into, and distributed through the valley region, it will be admitted that the entire freight tonnage carried in the valley is double the farm product tonnage.

ANOTHER ESTIMATE.

Take another and different estimate based upon the freight carried on the Mississippi and its tributaries in 1889, as given in the late census. As this freight was carried on different rivers and on different reaches of the same rivers, in high and low stages of water, the carrying rates varied according to locality and time, and we have no means of forming an average; but we have the rate at which freight can be, and is carried from St. Louis to New Orleans in a fair stage of water; and a comparison between this and the average railroad rate for the whole country will afford a result which it will be safe to rely on. Freight is carried from St. Louis to New Orleans at \$2.20 a ton, which for the distance of 1,200 miles, is 1 8-10 mills per ton per mile. But the average rate on all the railroads in the country, as

given in the report of the Interstate Commerce Commission, for the year ending June 30, 1890, was 9 4-10 mills per ton per mile—the difference being 7 6-10 mills in favor of the river. The whole amount of freight carried on the Mississippi and its tributaries in 1889 was 30,000,000 tons in round numbers, and if we multiply this by 120—the number indicated in the report of the Interstate Commerce Commission for converting freight tonnage into mileage tonnage—we have 3,600,000,000 as the number of tons of freight moved one mile on the Valley rivers. This number multiplied by the average railroad rate per ton per mile—9 4-10 mills—gives \$33,840,000; and multiplied by the high water river rate between St. Louis and New Orleans—1 8-10 mills—gives \$6,480,000. The difference between the two sums is \$27,360,000. In other words it would have cost the 30,000,000 tons of Western river freight, \$27,360,000 more money if carried at the average rail rate for the whole country, than if carried at the high-water river rate.

And even this saving of \$27,360,000 per annum does not exhaust the estimate—for it is the saving on the limited amount of freight carried on the rivers only—30,000,000 tons. There was probably five times as much carried by rail in the Valley the same year—and the opinions of railway authorities and New York officials already quoted show that a long navigable river in good condition regulates rates, not only by water, but by rail also. The easier and cheaper its navigation is, the lower it will force railroads, whether parallel or perpendicular to it, to reduce their rates to compete with it. This has been demonstrated in the working of the Erie canal; not more than one-fifth the freight carried into and out of New York from and to the interior passes through this small water-way—and yet, it has cheapened the cost of carrying on the entire traffic with the West, to the amount of millions—indeed, it might be said, hundreds of millions, in the last twenty years.

When it is further considered that the railroads alone carried in 1890, 636,000,000 tons of freight and 492,000,000 passengers, besides what were carried by water, and that they were paid for the service over \$1,000,000,000—we get some idea of the enormous business of exchange constantly going on in the vast Valley stretching over twenty degrees of latitude and twenty-five degrees of longitude, yielding the produc-

tions of many climes, and inhabited by an industrious, enterprising and prosperous population of 28,000,000 of the largest capacity, both for production and consumption—and it will be admitted that a very slight reduction in the carrying rates of even a portion of this vast traffic would make an aggregate greater than the sum estimated above. The figures, instead of being too large are probably not large enough; the desired improvement of the navigation of the Mississippi would save to the people twice \$24,000,000 a year.

EQUIPMENT AND TRAFFIC ON THE MISSISSIPPI AND ITS TRIBUTARIES.

Tables V, VI and VII of the appendix present an exhibit of the floating equipment of the Mississippi river and its tributaries, the traffic, and the income and expenditures. It is from the bulletins of the United States census of 1890. The whole number of craft is given at 7,445, having a tonnage of 3,393,379, and valued at \$15,538,005. These craft carried, in 1890, 10,858,894 passengers of all kinds, including those carried on excursion trips, and across ferries; they carried also 29,405,046 tons of freight, and their total receipts for this service were \$16,335,503. It will be observed that the Ohio system makes the most conspicuous showing in the number of boats, tonnage, value of craft, number of passengers, and amount of freight carried and the number of miles traversed. This is explained by the fact that while the Ohio craft are run on that river and its tributaries, a very large share of their business is not confined to them, but flows into the Mississippi. In a traffic view, the Ohio does not end at Cairo, but extends all the way from Pittsburg to the jetties, for Pittsburg, Cincinnati, Louisville and Evansville boats make trips to New Orleans, and many boats in the great coal fleets sent out every year from the Upper Ohio find their way to points on the Lower Mississippi.

Some idea of what proportions the traffic on the Mississippi would assume under a wisely conceived and executed system of improvements, insuring an all-the-year-round low water stage treble, or even double that which now prevails, may be formed by contemplating the figures showing what that traffic is under existing discouragements. From an interesting statement made by Mr. John H. Oberly,

before the Western Water-Ways Convention held at Evansville, Ind., October 14, 1891, the following exhibit is made up, the figures having been obtained from the Census Bureau:

TONS OF FREIGHT CARRIED ON THE UPPER MISSISSIPPI AND MISSOURI AND THEIR TRIBUTARIES, THE OHIO AND ITS TRIBUTARIES, AND THE LOWER MISSISSIPPI AND ITS TRIBUTARIES IN 1889.

Commodities.	Tons.
Coal.....	10,632,109
Forest Products.....	10,531,189
Merchandise.....	5,886,259
Wheat.....	1,068,504
Cotton.....	686,635
Iron Ore.....	536,647
Cotton Seed and Oil.....	392,988
Corn ..	266,071
Sugar and Molasses.....	189,829
Animal Products.....	169,470
Stone and Gravel ..	158,453
Clay and Sand.....	141,464
Manufactured Iron.....	122,060
Mill Products.	88,129
Hay.....	78,635
Other Grain.....	51,308
Fruits and Vegetables.....	23,091
Tobacco.....	17,707
Pig Iron.....	5,506
Oils.....	3,128
Ice.....	4,000
Cement, Brick and Lime.....	1,231
Total.....	31,054,423

EQUIPMENT OF THE GREAT LAKES.

Tables VIII, IX, and X, give the floating equipment of the great lakes in 1886 and in 1890, and the freight tonnage that passed through Detroit river in the year 1889, and through the Soo Canal in 1890. The character of the craft and the traffic on the lakes is so different from that of the craft and traffic on the rivers of the valley, that it is impossible to institute a fair comparison between them. Still, it may be observed that while there are more than twice as many vessels on the rivers, with four times the tonnage, as on the lakes, the lake vessels have more than three times as great a value. The total amount of freight moved on the rivers was 29,405,046 tons, and the whole number of passengers carried was 10,858,894. When these

figures are considered in connection with the whole amount of freight—636,441,617 tons, and the whole number of passengers, 492,430,865—carried on all the railroads of the country in the same year, it will be seen that the Mississippi and its tributaries, even with all the risks and disadvantages that attend the navigation of them part of the year, and in spite of the competition of railroads, perform a most important part in the interior traffic of the country; and it is impossible not to ask the question: If these rivers carry nearly 11,000,000 passengers and 30,000,000 tons freight, in their present condition, with a low water stage of two to four and a half feet for a great part of the year, what could they not do with a permanent depth of six to ten feet?

There is no official statement in the equipment of the Lakes of the traffic on them for the year 1891; but Gen. Poe, U. S. Engineer, in charge of the Government improvements in Detroit River, estimates the aggregate tonnage of vessels passing through that river, both ways, for that year at 21,684,000. This is probably more than the number of tons of freight carried through the river; and yet, taking the figures as they are, they fall short 7,700,000 tons of the freight carried on the Mississippi and its tributaries—and this, although the Detroit River is the gate in a lake water-way, whose minimum depth is 16½ feet, while a great portion of the 29,405,000 tons of the river traffic in the Mississippi Valley was carried on three to five feet of water.

THE LOWEST WATER RATE NOT YET REACHED.

Carriers on the Mississippi have never been able to adjust the character of their craft to the demands of cheap carriage, because the great fluctuations in the stage of water in a single season have not permitted it. On the ocean and the lakes, the largest vessels are the cheapest carriers; but on the Mississippi a large boat that loads to eight or nine feet in high water, cannot carry a third of a cargo on a four or five foot stage—and a light draft boat that runs on a five foot stage, is not profitable in high water. Carrying rates as a rule, go up and down, inversely, as the water goes up and down; and yet experienced vessel owners assert that there is no profit in low water carrying, at any rate, the half cargoes, the delays and the risks generally consuming all the receipts, and frequently resulting in losses.

With a good river, they carry grain from St. Louis to New Orleans, a distance of 1,242 miles, for 11 cents per 100, or \$2.20 a ton, or less than 2½ mills per ton per mile—the average railroad rate for the whole country being about 9½ mills per ton per mile. And yet, low as this is, they assert that they can reduce it still lower, with an abundant supply of freight, and with a permanent good stage of water that would permit them to build boats suited to the conditions.

The record of the business on the lakes for 1891 shows that the highest rate on ore from Escanaba in Wisconsin, on Lake Michigan to points on Lake Erie was \$1.30 per ton, and the lowest 55 cents; and that the rate on wheat from Duluth to Buffalo ranged from 1½ cents per bushel to 4 cents and 9½ cents—the latter figures being for the last ten days before the close of navigation. The rate on hard coal from Buffalo to Duluth ranged from 50 cents down to 10 cents a ton, the average being about 35 cents, and soft coal rates from 60 cents to 40. From Buffalo to Chicago and Milwaukee the rates were 50 to 70 cents on hard coal, and 55 cents to \$1 on soft.

These rates would appear to be so low that nothing more could be desired; and yet there is a demand for a still further deepening of St. Mary's Canal, the channel between Lakes Huron and Detroit River, so that the rates may be further reduced, and an additional saving secured to the people on the shipment of their products. A correspondent of Bradstreets, in a review of the seasons business, says: "Probably \$2,000,000 in freights have been paid by Duluth grain shippers this fall. If the channels connecting the great lakes were 18 to 20 feet deep, they would have saved from 20 to 40 per cent of this sum, as at present, none of the large boats out of Duluth can take more than 80 per cent of the full capacity."

The improvement in the St. Mary's Falls canal, commonly called the Soo canal, which consisted in deepening it from 12 to 16 feet, was completed in 1886, at a cost of \$3,000,000, and has been followed by an increase in the amount of freight passing through it from 1,878,000 tons in 1881 to 3,070,000 tons in 1886, and 9,400,000 tons in 1891. Before the deepening, the largest wheat shipments from all points on Lake Superior through the canal in one year were 26,000,000 bushels; in 1891, the shipments from three points on the lake, Duluth, Port Arthur and Washburn were 40,000,000 bushels.

The U. S. engineer under whose supervision the improvement was made, reported in 1886 that it had reduced the carrying rates on wheat from Lake Superior points to Buffalo to $3\frac{1}{4}$ and 4 cents a bushel—the rate by other routes being 14 cents—and that the saving on wheat alone for the year 1886 was \$2,600,000.

It would be impossible to strengthen the demonstration of the superiority in point of cheapness, of water carriage over rail, which these simple figures present, or to furnish a more effective argument in favor of the economy of improvements to make water carriage safe, easy and cheap, than that afforded by the almost marvelous results that have attended the deepening of the Soo canal; and as the laws of trade are the same all over the country, on the Mississippi and on the Lakes, it is strictly warrantable to assume that a deepening of the low water channel on the river would be attended by similar results.

THE COMING FUTURE.

The improvement which your memorialists ask for is enforced not only by the policy of interior development that has animated and guided the government for thirty years past, but by the interesting and significant course of events in the Western Hemisphere. Have we not recently seen a Pan-American congress assembled in our national capitol? And have we not just supplemented our policy of interior development by a vast and liberal scheme of reciprocity with the Spanish-American countries south of us? Are we not witnessing attempts to cut two great ship canals in Central America, for the purpose of uniting the two great oceans? And are not these things an instinctive recognition of the approach of new conditions in the countries south of us, and of the direction of wealth and energies that find insufficient employment in older countries to the development of the great resources of Central and South America?

And when we contemplate the steady drift of immigration to the New World, and picture the stream of traffic which, in ten years, probably in five, will be passing through an isthmus canal, and the important international interests that will converge in that quarter, may we not be pardoned for suggesting that a national policy of

improvement of the navigation of the Mississippi river, whose mouth lies so near to the isthmus, is an urgent feature in our preparations for the approaching changes which these signs indicate ?

Our country is prosperous and powerful—prosperous above all others on the globe in the opportunity afforded to the masses of its population to earn, and in their capacity to spend—and powerful in the ardent and affectionate attachment of its people to its free institutions. It is peaceful country, without traditional enemies to fear, and without diplomatic complexities and adjustments to maintain, at the cost of blood and treasure—and the energies which, in other lands, are embodied in vast standing armies to awe the people, or take part in probable conflicts, are, here, directed to the production and distribution of wealth, the multiplication of comforts, the construction of artificial, and the improvement of natural agencies of interchange, the mitigation of irksome conditions, and the increase of the adjuncts that minister to the contentment and ease of the masses. Its marvelous growth in population, wealth and power; its enormous foreign commerce; the patriotic and cheerful alacrity with which its people have, in twenty-five years, paid five-sevenths of a war debt of \$2,800,000,000; and its annual treasury statements which uniformly show a surplus and never a deficit, are a phenomenon to the nations of the Old World, and an illustration of what an intelligent, virtuous, and industrious population can do, under a benign and gentle government that interferes in their business enterprises only to do for them what they cannot do for themselves. Such a population or any considerable part of it may, with good reasons, call upon the their government for aid in public works that promise to lighten their labors, and increase the effectiveness of their energies; and your memorialists plead this consideration in behalf of the people of the Mississippi Valley for the measure herein presented, and embodied in the bill appended to this memorial. The permanent improvement of the great river which bears the waters of twenty-four States through more than 2,000 miles of an ever flowing current, to the Gulf, would facilitate and cheapen the navigation of it, stimulate their energies to a still further production, and increase still further their capacity for consumption, by saving for them the many millions now paid out every year in excessive freight rates ;

and it would reveal itself in the end as a wise measure of national economy, diffusing its benefits directly or indirectly to every part of the country.

MEMBERS OF THE EXECUTIVE COMMITTEE.

MARCUS BERNHEIMER, - - - - - Chairman.

HENRY C. HAARSTICK,	}	Representatives of Merchants' Exchange.
ISAAC M. MASON,		
E. O. STANARD,		
THOS. BOOTH,		
WEB M. SAMUEL,		
NATHAN FRANK,		
F. G. NIEDRINGHAUS,		
MICHAEL MCENNIS,		
GEO. H. PLANT,		
FRANK GAIENNIE,		

JEROME HILL,	-	Representing the Cotton Exchange.
PATRICK MULCAHY,	"	" Mechanics' Exchange.
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J. B. DENVIR,	"	" Saddlery Association.
SAM'L T. McCORMICK,	"	" St. Louis Spanish Club.
JOHN H. MAXON,	"	" Paint, Oil and Drug Club.
L. B. TEBBETS,	"	" St. Louis Traffic Com.
L. D. KINGSLAND,	"	" Farm Imp. & Vehicle Assn

M. J. MURPHY,	}	Representing the City Government.
DAN. ABLE,		
C. C. RAINWATER,		
HARRY HILL,		

GEO. BURNET,	Representing the Mercantile Club.
CONRAD FINK,	" " Ass. Wholesale Grocers.
JESSE L. BOOGHER,	" " Merchants' Tranptn. Assn.
P. S. DROWN,	" " Miss. and Ohio Riv. Plt. Assn.

GEO. H. MORGAN,
Secretary and Treasurer.

A BILL TO PROVIDE FOR THE PERMANENT IMPROVEMENT OF THE MISSISSIPPI RIVER, AND FOR AN APPROPRIATION THEREFOR.

Be it enacted by the Senate and House of Representatives of the United States in Congress, assembled:

SECTION 1. That the Mississippi River from the Falls of St. Anthony to the jetties be permanently improved under the direction of the Secretary of War and the Chief of Engineers of the Army, pursuant to such plan as shall be established by the Secretary of War and the Chief of the Bureau of Engineers of the United States Army for the continuous and permanent improvement of the said river.

That the sum of eight (\$8,000,000) million dollars be, and the same is hereby appropriated out of any money in the Treasury not otherwise appropriated for said permanent improvement, and a similar sum shall be annually expended under the direction of the Secretary of War, in accordance with the plan established as hereinbefore stated until said river is permanently improved for safe and useful navigation.



APPENDIX.

A National Policy of Improvement

—FOR THE—

MISSISSIPPI RIVER.

*Resolution Adopted by the National Board of Trade at its Meeting
in Washington City, January 28, 1892.*

WASHINGTON, January 28, 1892.

At the National Board of Trade meeting held here to-day Governor Stanard introduced the following, which was unanimously adopted:

WHEREAS, The improvement of the Mississippi River is of paramount importance to the whole country, particularly to the great West and Northwest, the region from whence the great bulk of our food products come; and

WHEREAS, The improvement of tributary streams will be of comparative little benefit until the main artery is made navigable at all seasons of the year so as to transport without delay or hindrance all the freight that is brought to its banks, both by water and by rail; and

WHEREAS, The permanent and complete improvement of the Mississippi River demands a more extensive and comprehensive plan of operation than has been pursued in the past in order that practical results may be obtained; therefore

Resolved, That the Congress of the United States be requested to consider the needs of the Mississippi River independent of other river and harbor improvement, and to make an appropriation sufficient for its permanent and complete improvement from its source to the jetties, and providing that such proportion of said appropriation be made available each year as can be used to advantage by the

Mississippi River Commission and the Government Engineers under the direction of the Secretary of War, and the Chief of Engineers of the army, the idea being that a plan shall be adopted for the whole river and the work be continuous, and not be delayed or hindered or the cost thereof increased by the uncertainty of annual or biennial appropriations in the river and harbor bill.

Resolved, That for the temporary improvement of said river during periods of low water pending the permanent improvement thereof, a sufficient amount be appropriated by Congress and placed at the disposal of the Mississippi River Commission and the engineers in charge for the construction of the dredgeboats to be used in removing bars found during low water, so that the commerce of the Mississippi Valley may not be impeded while the work of permanent improvement is being prosecuted.

TABLE I.
GRAIN PRODUCT OF THE NINE INDUSTRIAL STATES.
WHEAT.

	Bushels, Wheat.	Population, 1890.
Maine.....	669,000	660,000
New Hampshire.....	148,000	375,000
Vermont.....	344,000	332,000
Massachusetts.....		2,233,000
Rhode Island.....		345,000
Connecticut.....	31,000	746,000
New York.....	10,633,000	5,981,000
New Jersey.....	2,124,000	1,441,000
Pennsylvania.....	20,864,000	5,248,000
	34,813,000	17,363,000

CORN AND OATS.

	Corn, bushels.	Oats, bushels.	Population.
Maine.....	1,107,000	3,446,000	660,000
New Hampshire.....	1,333,000	1,098,000	375,000
Vermont.....	2,144,000	4,037,000	332,000
Massachusetts.....	2,138,000	768,000	2,233,000
Rhode Island.....	450,000	226,000	345,000
Connecticut.....	2,112,000	1,147,000	746,000
New York.....	22,080,000	41,894,000	5,981,000
New Jersey.....	12,343,000	3,884,000	1,441,000
Pennsylvania.....	46,527,000	33,704,000	5,248,000
	90,234,000	90,114,000	17,363,000

TABLE II.
GRAIN CROP OF 1891.
WHEAT.

Total for all the States and Territories—bushels: 611,916,780. For the Mississippi Valley States and Territories:

Bushels.	Bushels.
Mississippi.....	483,000
Arkansas.....	2,236,000
Tennessee.....	11,626,000
West Virginia.....	3,423,000
Kentucky.....	13,181,000
Ohio.....	45,531,000
Indiana.....	52,807,000
Illinois.....	35,025,000
Wisconsin.....	13,043,000
Minnesota.....	55,333,000
Iowa.....	27,586,000
	443,432,000

CORN.

Total crop of the country in 1891—bushels: 2,060,154,000. Crop of the Mississippi Valley States and Territories:

Bushels.	Bushels.
Mississippi.....	29,665,000
Louisiana.....	18,725,000
Arkansas.....	42,455,000
Tennessee.....	82,552,000
West Virginia.....	18,888,000
Kentucky.....	82,795,000
Ohio.....	94,092,000
Indiana.....	123,622,000
Illinois.....	234,880,000
Wisconsin.....	29,718,000
Minnesota.....	21,586,000
	1,662,000,000

OATS.

Total Crop for 1891—bushels: 738,394,000. Crop of the Mississippi Valley States:

Bushels.	Bushels.
Mississippi.....	3,747,000
Louisiana.....	634,000
Arkansas.....	4,945,000
Tennessee.....	5,960,000
West Virginia.....	2,385,000
Kentucky.....	8,175,000
Ohio.....	28,523,000
Indiana.....	21,034,000
Illinois.....	111,095,000
Wisconsin.....	49,348,000
Minnesota.....	52,015,000
	551,458,000

TABLE III.

COTTON CROP OF 1890-91.

TOTAL, 8,674,000 BALES.

CROP OF THE MISSISSIPPI VALLEY STATES.

Bales.	Bales.
Mississippi.....	1,265,000
Louisiana.....	590,000
Arkansas.....	830,000
Tennessee.....	345,000
Missouri.....	30,000
Indian Territory.....	23,000
	3,083,000

TABLE IV.
ESTIMATED NUMBER OF ANIMALS ON FARMS AND RANCHES,
TOTAL VALUE OF EACH KIND, JANUARY, 1890.

From the report of J. R. Dodge, Statistician of the Department of
 Agriculture.

States and Territories.	No. Horses.	No. Mules.
Maine	99,657	.....
New Hampshire	52,402	.....
Vermont	84,353	.....
Massachusetts	63,838	.....
Rhode Island	10,258	.....
Connecticut	51,376	.....
New York	673,950	5,288
New Jersey	96,294	9,501
Pennsylvania	606,931	23,021
Delaware	23,000	4,184
Maryland	130,303	13,761
Virginia	259,317	36,083
North Carolina	154,229	96,295
South Carolina	70,303	79,269
Georgia	115,629	155,700
Florida	34,737	13,000
Alabama	134,805	143,258
Mississippi	139,468	196,436
Louisiana	124,650	94,785
Texas	1,350,344	213,146
Arkansas	187,153	129,866
Tennessee	303,206	229,246
West Virginia	146,647	6,867
Kentucky	390,577	155,858
Ohio	771,607	24,472
Michigan	477,407	6,095
Indiana	667,577	53,827
Illinois	1,123,973	109,947
Wisconsin	437,820	7,066
Minnesota	394,783	11,412
Iowa	1,095,300	42,316
Missouri	789,769	230,097
Kansas	726,318	94,714
Nebraska	542,036	45,792
California	372,084	42,803
Oregon	186,841	3,315
Nevada	51,523	2,369
Colorado	137,835	8,000
Arizona	32,670	2,936
Dakota	296,555	16,682
Idaho	137,865	1,704
Montana	216,495	2,450
New Mexico	52,350	10,263
Utah	139,399	4,055
Washington	118,633	1,268
Wyoming	141,570	2,880
Total	14,213,837	2,331,027

**ESTIMATED NUMBER OF ANIMALS ON FARMS AND RANCHES,
TOTAL VALUE OF EACH KIND, JANUARY, 1890.**

States and Territories.	No. Milch Cows.	No. Oxen and other cattle.
Maine	175,949	157,386
New Hampshire	103,011	116,169
Vermont	234,642	169,053
Massachusetts	174,729	98,774
Rhode Island	24,041	12,194
Connecticut	134,897	102,143
New York	1,552,373	783,634
New Jersey	183,493	67,856
Pennsylvania	938,665	852,267
Delaware	29,543	26,866
Maryland	141,826	127,335
Virginia	272,036	419,523
North Carolina	272,155	398,414
South Carolina	156,575	210,396
Georgia	354,618	580,816
Florida	54,951	565,201
Alabama	311,805	454,042
Mississippi	309,234	441,862
Louisiana	177,613	295,731
Texas	843,342	7,167,853
Arkansas	329,121	587,212
Tennessee	377,740	484,578
West Virginia	179,939	286,538
Kentucky	317,093	523,728
Ohio	791,316	986,601
Michigan	454,926	547,716
Indiana	602,354	957,843
Illinois	1,072,473	1,713,966
Wisconsin	674,588	805,170
Minnesota	492,117	617,256
Iowa	1,331,888	2,577,161
Missouri	774,122	1,515,935
Kansas	750,815	1,829,422
Nebraska	420,069	1,306,372
California	268,628	607,805
Oregon	88,730	762,728
Nevada	18,399	373,527
Colorado	65,563	1,048,933
Arizona	16,790	604,170
Dakota	248,619	822,017
Idaho	31,750	374,247
Montana	33,015	981,786
New Mexico	20,375	1,383,357
Utah	52,910	426,170
Washington	83,641	369,381
Wyoming	10,404	1,217,890
Total	15,952,883	36,849,024

ESTIMATED NUMBER OF ANIMALS ON FARMS AND RANCHES,
TOTAL VALUE OF EACH KIND, JANUARY 1890.

States and Territories.	No. Sheep.	No Hogs.
Maine	542,258	79,043
New Hampshire	192,824	52,713
Vermont	362,112	77,888
Massachusetts	56,530	68,580
Rhode Island	20,231	13,796
Connecticut	46,759	55,598
New York	1,548,426	686,321
New Jersey	103,170	204,669
Pennsylvania	945,002	1,193,415
Delaware	22,294	51,185
Maryland	153,763	343,079
Virginia	454,563	1,009,659
North Carolina	414,819	1,291,893
South Carolina	102,031	670,652
Georgia	411,846	1,627,008
Florida	110,351	358,021
Alabama	286,236	1,530,001
Mississippi	340,148	1,443,813
Louisiana	115,082	706,947
Texas	4,752,640	2,321,246
Arkansas	269,484	1,663,275
Tennessee	511,118	2,242,215
West Virginia	508,654	486,226
Kentucky	805,978	2,255,102
Ohio	3,943,589	2,611,014
Michigan	2,240,841	978,755
Indiana	1,278,000	2,845,302
Illinois	688,387	5,433,250
Wisconsin	809,009	1,087,902
Minnesota	327,375	527,526
Iowa	475,816	5,805,000
Missouri	1,198,200	5,096,000
Kansas	438,313	2,734,195
Nebraska	239,400	2,309,779
California	4,035,120	647,000
Oregon	2,929,830	270,164
Nevada	700,986	19,232
Colorado	1,783,891	29,508
Arizona	698,404	20,140
Dakota	266,329	476,569
Idaho	487,357	31,000
Montana	1,989,845	29,254
New Mexico	3,092,736	22,593
Utah	2,055,900	47,641
Washington	673,060	143,411
Wyoming	1,017,373	5,200
Total	44,336,072	51,602,780

PRODUCTION AND EXPORT OF CORN.

YEARS.	Production, bushels.	Exports, bushels.	Exportation, per cent.
1870.....	1,094,255,000	10,673,553	1.0
1871.....	991,898,000	35,727,010	3.6
1872.....	1,092,719,000	40,154,374	3.7
1873.....	932,274,000	35,985,834	3.9
1874.....	850,148,500	30,025,036	3.5
1875.....	1,321,069,000	50,910,532	3.9
1876.....	1,283,827,500	72,652,611	5.7
1877.....	1,342,558,000	87,192,110	6.5
1878.....	1,388,218,750	87,884,892	6.3
1879.....	1,754,591,676	99,572,329	5.7
1880.....	1,717,434,543	93,648,147	5.5
1881.....	1,194,916,000	44,340,683	3.7
1882.....	1,617,025,100	41,655,653	2.6
1883.....	1,551,066,895	46,258,606	3.0
1884.....	1,795,528,000	52,876,456	2.9
1885.....	1,936,176,000	64,829,617	3.3
1886.....	1,665,441,000	41,368,584	2.5
1887.....	1,456,161,000	25,360,869	1.7
1888.....	1,987,790,000	70,841,673	3.6
1889.....	2,112,892,000	103,418,709	4.9
Annual average.....	1,454,299,498	56,768,864	3.9

HOGS.

The following table shows the population of the United States, the total hog product including lard put on the market by the packing establishments, the quantity which this constitutes per capita of population, the quantity of hog product exported, and the total and per capita quantity remaining for home consumption for each year since 1873:

From the report of J. R. Dodge Statistician of the Department of Agriculture.

Year.	Population.	Hog Products.				
		Total.		Exported, year ending June 30.	Home Consumption.	
		Pounds, year end'g March 1	Per capita.		Pounds.	Per capita.
1873.....	42,125,489	1,654,707,583	39.3	690,063,405	964,644,178	22.9
1874.....	43,281,338	1,701,314,614	39.3	623,415,255	1,077,899,359	24.9
1875.....	44,374,463	1,611,038,842	36.3	473,308,273	1,137,730,569	25.6
1876.....	45,431,938	1,457,753,118	32.1	550,331,129	907,411,989	20.0
1877.....	46,482,434	1,669,369,043	35.9	764,470,273	904,898,770	19.5
1878.....	47,550,552	2,045,239,979	43.0	1,007,371,526	1,037,868,453	21.8
1879.....	48,679,389	2,515,978,153	51.7	1,143,309,938	1,372,668,215	27.2
1880.....	50,155,703	2,428,535,672	48.3	1,230,702,175	1,192,833,497	23.8
1881.....	51,473,728	2,643,053,296	51.3	1,233,015,127	1,410,038,169	27.4
1882.....	52,923,275	2,357,932,478	44.5	798,841,846	1,559,090,632	29.5
1883.....	54,215,960	2,148,369,223	39.6	627,093,446	1,521,275,777	28.1
1884.....	55,435,564	2,228,427,478	40.2	725,142,817	1,513,284,661	27.3
1885.....	56,547,692	2,441,877,868	43.2	755,416,926	1,686,460,942	29.8
1886.....	57,613,057	2,536,117,826	44.9	800,784,530	1,735,333,296	31.0
1887.....	58,848,103	2,677,814,968	45.5	827,349,998	1,850,464,970	31.4
1888.....	60,155,898	2,523,552,000	42.0	732,079,843	1,791,472,157	29.8
1889.....	61,378,141	2,479,053,000	40.4	782,601,275	1,696,451,725	27.6
1890.....	62,622,250	3,047,651,000	48.7	1,159,643,885	1,888,008,115	30.1

CATTLE.—RECEIPTS AND SHIPMENTS OF WESTERN MARKETS, 1890.

The receipts of cattle at Chicago, Kansas City, St. Louis and Omaha are more than three times as large as fifteen years ago, and have increased more than 70 per cent in five years. The increase exceeds 2,300,000, while the increase in exportation is only about 260,000, or including increase of meat exportation about 1,000,000 beeves, leaving nearly three-fourths of the increase for home consumption. The total exports of 1889-90, in beeves and beef, were little short of 1,000,000 animals, much above the average of our beeves in condition.

Year.	Chicago.		St. Louis.		Kansas City.		Omaha.	
	Receipts.	Shipments.	Receipts.	Shipments.	Receipts.	Shipments.	Receipts.	Shipments.
1870	532,964	391,709	201,422	129,748	21,000	No record.		
1875	920,843	696,534	335,742	216,201	174,751	126,262		
1880	1,382,477	886,614	424,720	228,879	244,709	194,421		
1885	1,905,518	744,093	386,320	233,249	506,627	402,381		
1886	1,963,900	704,675	377,550	212,058	490,971	370,350	114,163	83,233
1887	2,382,008	791,483	464,828	277,419	669,224	483,372	144,457	73,120
1888	2,611,543	968,385	546,875	336,206	1,056,086	682,622	235,723	151,419
1889	3,023,281	1,259,971	508,190	297,879	1,230,243	744,510	340,469	206,064
1890	3,481,280	1,260,309	639,014	361,225	1,472,229	923,552	467,340	227,921
							606,699	283,880

Comparing receipts and shipments, we find a decrease in the proportion of shipments, due to the great development of the dressed meat trade, which increases the proportion slaughtered in the West. The use of the refrigerator car has wrought a great change in the methods of transportation of meat.

SHEEP.—RECEIPTS AND SHIPMENTS OF WESTERN MARKETS.

Year.	Chicago.		St. Louis.		Kansas City.		Omaha.	
	Receipts.	Shipments.	Receipts.	Shipments.	Receipts.	Shipments.	Receipts.	Shipments.
1870	349,853	116,711	94,477	11,649	25,327	17,742		
1875	418,948	243,604	125,679	37,784	50,611	36,285		
1880	335,810	156,510	205,969	93,522	220,801	115,755	18,985	8,408
1885	1,003,598	260,277	362,858	233,391	172,659	83,234	40,195	17,728
1886	1,008,700	266,912	328,985	202,728	209,956	103,126	76,014	56,444
1887	1,360,862	445,094	417,425	287,018	351,050	169,932	158,503	118,208
1888	1,515,014	601,241	456,669	316,676	370,772	174,851	159,503	203,250
1889	1,832,469	711,315	368,495	255,375	535,869	336,207	156,186	94,464
1890	2,182,667	929,854	358,506	252,151				

TABLE V.

Number, Tonnage and Value of all Steamers and Unrigged Craft (over 5 tons) Owned on the Rivers of the Mississippi Valley in 1889.

FROM THE UNITED STATES CENSUS, 1890.

RIVERS.	STEAMERS.			UNRIGGED.			TOTAL.		
	NO.	TONNAGE.	VALUE.	NO.	TONNAGE.	VALUE.	NO.	TONNAGE.	VALUE.
Total for Mississippi Valley	1,106	210,771.89	\$10,539,251	6,339	3,182,608.00	\$4,768,754	7,446	3,393,379.89	\$15,338,005
Upper Mississippi	188	24,978.21	\$1,485,369	283	105,685.00	\$214,018	473	190,663.12	\$1,699,387
St. Croix	15	1,258.35	99,000	11	10,000.00	11,000	26	11,258.35	110,000
Chippewa	1	108.00	7,000	.....	.....	.....	1	108.00	7,000
Illinois	9	1,860.25	80,200	.....	.....	.....	9	1,860.25	80,200
Missouri, Osage & Gasconade.	52	4,759.84	209,700	52	4,895.00	30,705	104	9,657.84	240,405
Total for Upper Miss. Syst.	265	32,964.65	\$1,881,269	348	180,583.00	\$255,723	613	213,547.65	\$2,136,992
Ohio	380	85,035.62	\$4,099,177	4,488	2,355,846.00	\$2,858,336	4,868	2,440,881.62	\$6,957,513
Allegheny	6	715.84	53,000	26	2,340.00	10,400	32	3,055.84	63,400
Monongahela	48	6,234.15	419,600	110	16,653.00	30,100	158	22,887.15	449,700
Muskingum	7	567.79	25,050	72	7,803.00	28,465	79	8,370.79	53,515
Little Kanawha	5	228.18	18,000	48	4,744.00	12,000	53	4,972.18	30,000
Great Kanawha	21	2,386.13	123,333	872	409,980.00	521,705	893	412,366.13	645,088
Big Sandy	8	787.67	40,000	9	3,150.00	4,000	17	3,937.67	44,000
Kentucky	5	374.31	21,000	3	165.00	1,100	8	539.31	22,100
Green	5	316.68	13,500	.....	.....	.....	5	316.68	13,500
Wabash	3	297.00	10,000	.....	.....	.....	3	297.00	10,000
Cumberland	17	2,935.57	109,300	20	1,870.00	4,300	37	4,805.57	113,600
Tennessee	32	7,316.89	260,750	60	10,722.00	33,225	92	18,038.89	293,975
Total for Ohio System	537	107,195.83	\$5,192,710	5,708	2,813,273.00	\$3,503,631	6,245	2,920,468.83	\$8,696,341

RIVER EQUIPMENT—CONTINUED.

RIVERS.	STEAMERS.			UNRIGGED.			TOTAL.		
	NO.	TONNAGE.	VALUE.	NO.	TONNAGE.	VALUE.	NO.	TONNAGE.	VALUE.
Lower Mississippi.....	257	62,476.07	\$3,152,372	250	175,510.00	\$1,001,250	507	237,986.07	\$4,153,622
White	5	1,229.71	45,000	1	40.00	100	6	1,269.71	45,100
Arkansas	15	4,098.73	66,200	7	310.00	1,400	22	2,408.73	67,600
Yazoo	11	1,409.68	62,000	9	1,670.00	17,450	20	3,079.68	79,450
Washita	3	994.52	45,000	.....	.....	.....	3	994.52	45,000
Red River	9	1,968.88	80,700	5	250.00	5,000	14	2,218.88	85,700
Total for Lower Miss. Syst. .	300	70,177.59	\$3,451,272	272	177,780.00	\$1,025,200	572	247,957.59	\$4,476,472
Red River of the North.	4	433.82	\$14,000	11	10,972.00	\$11,200	15	11,405.82	\$25,200

TABLE VI.—TRAFFIC.

Passengers Carried, Tons of Freight Moved, and Miles Traveled by all Craft (over 5 tons) Operating on the Rivers of the Mississippi Valley in 1889.

RIVERS AND THEIR TRIBUTARIES.	PASSENGERS CARRIED.			FREIGHT MOVED IN TONS.	MILES TRAVELED BY ALL STREAMERS.
	REGULAR AND EXCURSION.	FERRY.	TOTAL.		
Grand Total, Mississippi Valley.....	2,384,248	8,474,646	10,858,894	29,405,046	7,316,545
Upper Mississippi.....	285,676	1,192,409	1,478,085	4,486,421	1,101,990
St. Croix.....	304	12,000	12,304	846,816	67,900
Chippewa.....	4,441	.....	4,441	325,477	12,000
Illinois.....	21,768	28,600	50,368	180,264	83,436
Missouri, Osage and Gasconade.....	26,561	249,975	276,536	1,119,362	159,239
Total, Upper Mississippi System.....	338,750	1,482,984	1,821,734	6,958,340	1,424,655

TRAFFIC—CONTINUED.

RIVERS AND THEIR TRIBUTARIES.	PASSENGERS CARRIED.			FREIGHT MOVED IN TONS.	MILES TRAVELED BY ALL STEAMERS.
	REGULAR AND EXCURSION.	FERRY.	TOTAL.		
Ohio River.....	1,191,732	3,974,074	5,115,806	7,770,565	2,696,020
Allegheny.....	5,319		5,319	366,946	2,040
Monongahela.....	130,537	130,850	261,387	3,294,932	130,898
Muskingum.....	37,631		37,631	10,281	27,055
Little Kanawha.....	9,451		9,451	115,657	14,740
Great Kanawha.....	53,599	38,525	92,124	1,145,202	59,680
Big Sandy.....	11,000		11,000	286,483	47,350
Kentucky.....	9,550		9,550	256,950	12,588
Green River.....	11,200		11,200	819,278	10,300
Wabash.....	180		180	93,178	12,700
Cumberland.....	19,160		19,160	974,316	144,968
Tennessee.....	27,185	903,100	930,285	909,078	420,894
Total Ohio System.....	1,506,594	4,996,549	6,503,143	16,041,866	3,579,233
Lower Mississippi.....	518,267	1,933,048	2,451,315	*4,374,761	1,826,254
White River.....	4,183		4,183	86,393	68,786
Arkansas.....	2,651		2,651	1,663,817	61,689
Yazoo.....	5,391	62,065	67,456	77,380	121,216
Washita.....	1,204		1,204	93,707	60,828
Red River.....	7,208		7,208	105,145	172,800
Total, Lower Mississippi System.....	538,904	1,995,113	2,534,017	*6,401,203	2,311,573
Red River of the North.....				3,637	1,084

*Respectively, 7,754,491 tons, 9,820,833 tons, and 31,897,565 tons, including the coal and lumber brought into and carried on Lower Mississippi from the Upper Mississippi and Ohio Rivers.

RIVER EQUIPMENT—CONTINUED.

RIVERS.	STEAMERS.			UNRIGGED.			TOTAL.		
	NO.	TONNAGE.	VALUE.	NO.	TONNAGE.	VALUE.	NO.	TONNAGE.	VALUE.
Lower Mississippi.....	257	62,476.07	\$3,152,372	250	175,510.00	\$1,001,250	507	237,986.07	\$4,153,622
White	5	1,229.71	45,000	1	40.00	100	6	1,269.71	45,100
Arkansas	15	4,098.73	66,200	7	310.00	1,400	22	2,408.73	67,600
Yazoo	11	1 409.68	62,000	9	1,670.00	17,450	20	3,079.68	79,450
Washita	3	994.52	45,000	.....	.....	.....	3	984.52	45,000
Red River	9	1,968.88	80,700	5	250.00	5,000	14	2,218.88	85,700
Total for Lower Miss. Syst.	300	70,177.59	\$3,451,272	272	177,780.00	\$1,025,200	572	247,957.59	\$4,476,472
Red River of the North.....	4	433.82	\$14,000	11	10,972.00	\$11,200	15	11,405.82	\$25,200

TABLE VI.—TRAFFIC.

Passengers Carried, Tons of Freight Moved, and Miles Traveled by all Craft (over 5 tons) Operating on the Rivers of the Mississippi Valley in 1889.

RIVERS AND THEIR TRIBUTARIES.	PASSENGERS CARRIED.			FREIGHT MOVED IN TONS.	MILES TRAVELED BY ALL STEAMERS.
	REGULAR AND EXCURSION.	FERRY.	TOTAL.		
Grand Total, Mississippi Valley.....	2,384,248	8,474,646	10,858,894	29,405,046	7,316,545
Upper Mississippi.....	285,676	1,192,409	1,478,085	4,486,421	1,101,990
St. Croix.....	304	12,000	12,304	846,816	67,900
Chippewa.....	4,441	.....	4,441	325,477	12,000
Illinois.....	21,768	28,600	50,368	180,264	83,436
Missouri, Osage and Gasconade.....	26,561	249,975	276,536	1,119,362	159,239
Total, Upper Mississippi System.....	338,750	1,482,984	1,821,734	6,958,340	1,424,655

TRAFFIC—CONTINUED.

RIVERS AND THEIR TRIBUTARIES.	PASSENGERS CARRIED.			FREIGHT MOVED IN TONS.	MILES TRAVELED BY ALL STEAMERS.
	REGULAR AND EXCURSION.	FERRY.	TOTAL.		
Ohio River.....	1,191,732	3,974,074	5,115,806	7,770,565	2,696,020
Allegheny.....	5,319		5,319	865,946	2,040
Monongahela.....	130,537	130,850	261,387	3,294,932	130,898
Muskingum.....	37,631		37,631	10,281	27,055
Little Kanawha.....	9,451		9,451	115,657	14,740
Great Kanawha.....	53,599	38,525	92,124	1,145,202	59,680
Big Sandy.....	11,000		11,000	286,483	47,350
Kentucky.....	9,550		9,550	256,950	12,688
Green River.....	11,200		11,200	819,278	10,300
Wabash.....	180		180	93,178	12,700
Cumberland.....	19,160		19,160	974,316	144,968
Tennessee.....	27,185	903,100	930,285	909,078	420,894
Total Ohio System.....	1,506,594	4,996,549	6,503,143	16,041,866	3,579,233
Lower Mississippi.....	518,267	1,933,048	2,451,315	*4,374,761	1,836,254
White River.....	4,183		4,183	86,393	68,786
Arkansas.....	2,651		2,651	1,663,817	61,689
Yazoo.....	5,391	62,065	64,716	77,380	121,216
Washita.....	1,204		1,204	93,707	60,828
Red River.....	7,208		7,208	105,145	172,800
Total, Lower Mississippi System.....	538,904	1,995,113	2,534,017	*6,401,203	2,311,573
Red River of the North.....				3,637	1,084

*Respectively, 7,754,491 tons, 9,820,833 tons, and 31,897,565 tons, including the coal and lumber brought into and carried on Lower Mississippi from the Upper Mississippi and Ohio Rivers.

TABLE VII.

INCOME AND EXPENDITURES.

Gross Earnings, Expenses and Net Earnings of all Craft (over 5 Tons)
Operating on the Rivers of the Mississippi Valley in 1889.

RIVERS.	Gross Earnings.	Expenses.	Net Earnings.
Total for Mississippi Valley	\$16,335,503	\$12,598,342	\$3,737,161
Red River of the North	\$5,661	\$4,246	\$1,415
Upper Mississippi	\$1,994,786	\$1,403,746	\$591,040
St. Croix.....	169,184	93,708	75,481
Chippewa.....	18,244	9,844	8,400
Illinois.....	134,771	113,047	21,724
Missouri, Osage and Gasconade	294,470	229,477	64,993
Total for Upper Mississippi system	\$2,611,455	\$1,849,817	\$761,638
Ohio	\$5,070,654	\$4,000,777	\$1,069,877
Allegheny.....	20,630	18,449	2,181
Monongahela.....	496,930	398,861	98,069
Muskingum.....	55,482	40,589	14,893
Little Kanawha.....	30,921	17,343	13,578
Great Kanawha.....	192,006	138,677	53,329
Big Sandy.....	94,918	69,879	25,039
Kentucky.....	58,821	33,866	24,955
Green.....	31,889	27,154	4,735
Wabash.....	42,320	22,140	20,180
Cumberland.....	205,636	170,939	34,697
Tennessee.....	400,806	330,893	69,913
Total for Ohio System	\$6,701,013	\$5,269,567	\$1,431,446
Lower Mississippi	\$6,236,310	\$4,849,939	\$1,386,371
White.....	100,697	82,443	18,254
Arkansas.....	86,383	56,549	29,834
Yazoo.....	144,068	125,469	18,599
Washita.....	125,180	103,220	21,960
Red River.....	324,736	257,092	67,644
Total for Lower Mississippi system	\$7,017,374	\$5,474,712	\$1,542,662

TABLE VIII.
FLOATING EQUIPMENT ON THE GREAT LAKES, 1886.
 From the U. S. Census, 1890.

CLASSIFICATION OF VESSELS.	Number of vessels.	Net tonnage of vessels.	Valuation of vessels.
Total	1,997	634,652	\$30,597,450
A—STRUCTURE:			
Side-wheel Steamers.....	43	14,150	1,494,500
Propellers under 1,000 tons.....	335	177,402	9,475,100
Propellers bet. 1,000 and 1,500 tons.....	72	86,728	5,935,000
Propellers over 1,500 tons.....	21	34,868	2,645,000
Tugs.....	466	11,737	2,497,800
Schooners.....	730	183,792	5,398,850
Barges.....	330	125,975	3,151,400
B—MATERIAL:			
Steel.....	6	6,459	694,000
Iron.....	35	22,714	2,675,000
Composite.....	2	63	39,000
Wood.....	1,954	605,416	27,189,450
C—SAIL OR STEAM:			
Steam vessels.....	937	324,885	22,047,200
Sailing vessels.....	1,060	309,767	8,550,250

TABLE IX.
FLOATING EQUIPMENT ON THE GREAT LAKES, 1890.

CLASSIFICATION OF VESSELS.	Num- ber.	Ton- nage.	Value.	Increase.
Total.....	2,055	826,360	\$58,128,500	\$27,531,050
A—STRUCTURE:				
Side-wheel Steamers.....	42	16,949	2,209,500	715,000
Propellers under 1,000 tons.....	431	154,232	13,905,600	4,430,500
Propellers bet. 1,000 and 1,500 tons.....	122	151,611	11,804,000	5,869,000
Propellers over 1,500 tons.....	110	188,390	17,737,000	15,092,000
Tugs.....	448	12,520	2,778,250	280,650
Schooners.....	577	158,620	4,726,150	.....
Barges.....	325	144,038	4,968,000	1,816,000
B—MATERIAL:				
Steel.....	68	99,457	11,964,500	11,270,500
Iron.....	39	24,673	2,638,000	.....
Composite.....	13	13,554	1,465,000	1,426,000
Wood.....	1,935	688,676	42,061,000	14,871,550
C—SAIL OR STEAM:				
Steam Vessels.....	1,153	523,702	48,434,350	26,387,150
Sailing Vessels.....	902	302,658	9,694,150	1,143,900

TABLE X.

Freight tonnage passing through Saint Mary's Falls Canal during the year ending June 30, 1890.

FROM THE U. S. CENSUS, 1890.

Coal	1,894,483
Copper	36,086
Flour	254,088
Wheat	583,794
Grain (other than wheat)	76,065
Iron Ore	3,404,935
Pig and manufactured iron	72,163
Salt	31,164
Silver ore	5,905
Lumber	541,591
Building stone	40,829
Wool	2,597
Hides	455
Miscellaneous and unclassified	344,425
Total	8,288,580

Statement of freight tonnage passing through the Detroit River for the season of 1889.

Barley	33,294
Coal	5,313,419
Corn	1,777,750
Flour	655,395
Iron ore	6,610,293
Lumber	2,545,792
Laths	23,680
Oats	262,896
Pig Iron	94,337
Salt	47,737
Shingles	27,668
Wheat	824,451
Other Grain	105,412
Miscellaneous	1,390,717
Total	19,717,860

ALL RAIL PUBLISHED RATES OF FREIGHT FROM EAST ST. LOUIS TO NEW YORK CITY DURING 1890.

Prepared by Geo. H. Morgan, Secretary of St. Louis Merchants' Exchange.

WHEAT	From January 1st to June 9th.....	29	cts. per 100 lbs.
	" June 9th to November 24th.....	26	" "
	" November 24th to December 31st.....	29	" "
CORN...	From January 1st to May 15th.....	23½	cts. per 100 lbs.
	" May 15th to November 24th.....	23	" "
	" November 24th to December 31st.....	28	" "
OATS...	From January 1st to May 15th.....	25½	cts. per 100 lbs.
	" May 15th to November 24th.....	23	" "
	" November 24th to December 31st.....	29	" "
FLOUR..	From January 1st to November 24th.....	52	cents per Barrel.
	" November 24th to December 31st.....	58	" "

To Boston..... 5 cts. higher than N. Y. rate.

To Philadelphia.. 2 cts. lower " " "

To Baltimore.... 8 cts. " " "

Rate on grain from St. Louis Elevators 1½ cts. per 100 lbs. more than East St. Louis rate.

Rate on other heavy freight from St. Louis 4 cts. per 100 lbs. more than East St. Louis rate, and on higher classes of freight 5 cts. per 100 lbs.

From Union Depot one-half these rates.

ALL RAIL RATES OF FREIGHT IN CENTS FROM ST. LOUIS TO SOUTHERN CITIES DURING 1889.

ARTICLES.	MEM- PHIS.	VICKSBURG.		NEW ORLEANS.	
	January 1st to Dec. 1st, 1889.	January 1st to Feb. 25th, 1890.	Feb. 26th, 1890, to Dec. 31, '90.	January 1st. to Feb. 25th, 1890.	Feb. 26th, 1890. to Dec. 31st, '90.
Flour per barrel.....	30	45	45	45	45
Pork per barrel.....	50	75	75	75	75
Grain per 100 lbs.....	12	20	20	20	20
Meat, packed, per 100 lbs.....	16	28	25	28	25
Meat, loose, per 100 lbs.....	16	28	28	28	28
Hay per 100 lbs.....	12	20	20	20	20

STATEMENT OF THE TONS OF PROPERTY MOVED ON THE ERIE CANAL OF NEW YORK FOR ELEVEN YEARS.

From the Report of the Superintendent of Public Works of New York for 1891.

1880.....	4,608,651	1886.....	3,308,642
1881.....	3,598,721	1887.....	3,840,513
1882.....	3,694,364	1888.....	3,321,516
1883.....	3,587,102	1889.....	3,673,554
1884.....	3,389,555	1890.....	3,303,929
1885.....	3,203,207		

TONNAGE.

The whole number of tons of freight carried upon the canals of New York during the season of navigation of 1891 was 4,563,472 tons, and was composed of the following described class of articles:

Product of the forest.....	1,206,986
Agriculture.....	1,171,192
Manufactures.....	109,387
Merchandise.....	250,083
Other articles.....	1,825,824

Total 4,563,472

RECEIPTS BY ALL ROUTES AT NEW YORK FOR THE YEAR 1890.

	Various.	Total rail.	River and coast.	Canal.	Total water.	Total rail and water.
Flour, barrels.....	142,063	5,475,338	160,046	.....	160,046	5,635,384
Meal, barrels.....	246	179,833	4,120	.....	4,120	183,953
Meal, sacks.....	2,358	461,149	13,212	.....	13,212	494,361
Wheat, bushels.....	20,375	6,366,925	151,332	9,276,600	9,427,932	15,794,857
Corn, bushels.....	420,400	17,913,400	75,866	16,272,200	16,348,066	34,261,466
Oats, bushels.....	150,200	32,180,200	7,100	1,556,700	1,563,800	33,744,000
Barley, bushels.....	10,450	2,183,800	424,140	1,687,700	2,111,840	4,295,640
Rye, bushels.....	19,056	534,477	66,716	627,200	693,916	1,228,393
Malt, bushels.....	15,166	4,164,166	121,272	741,100	762,372	5,026,538
Peas, bushels.....	53,150	595,100	14	23,900	23,914	619,014
Total grain.....	688,797	63,938,068	846,440	30,185,400	31,031,840	94,969,908
Flour, bushels.....	639,239	24,639,020	720,207	.....	720,207	25,359,227
Meal, barrels.....	5,700	1,641,630	42,904	.....	42,904	1,684,534
Grand total.....	1,333,736	90,218,718	1,609,551	30,185,400	31,794,951	122,013,669
Per cent.....	1.09	73.94	1.32	24.74	26.06	100

IMPROVEMENT OF THE MISSISSIPPI RIVER, BETWEEN OHIO AND ILLINOIS RIVERS.

[Extracts from the Report of Major A. M. Miller, Corps of Engineers, Officer in charge for the fiscal year ending June 30, 1891.]

The object of the improvement is to obtain a minimum depth at low water of 6 feet from the mouth of the Illinois River to St. Louis, a distance of 41 miles, and 8 feet from St. Louis to the mouth of the Ohio River, a distance of 191 miles, the natural depth at low water being in many cases from 3½ to 4 feet. The initial point of the work for the lower portion is St. Louis, the programme being to make the work continuous, working downstream from that city. Work at detached points has also been carried on under allotments specially made by law for the improvement of landings and the protection of local interests.

The plan of general improvement contemplates a reduction of the river to an approximate width of 2,500 feet below St. Louis, the natural width being in many cases from 1 to 1½ miles, and the protection of the alluvial banks from erosion. The methods employed are to build up new banks with the solid matter caught from the river itself by means of hurdles and revetment of the banks, both new and old, when necessary.

THE UPPER MISSISSIPPI.

THE TRAFFIC ON IT, AND THE IMPROVEMENTS MADE IN 1891.

[Extract from the Annual Report of the Chief of Engineers to the Secretary of War for 1891.]

MISSISSIPPI RIVER BETWEEN MINNEAPOLIS AND DES MOINES RAPIDS.

Prior to August 11, 1888, this work was carried on under appropriations for "improving Mississippi River from St. Paul to Des Moines Rapids." The act of August 11, 1888, extended the upper limits of the district from St. Paul to Washington Avenue Bridge, Minneapolis.

Under this appropriation is carried on the improvement of through navigation. Work has been in progress under approved projects since 1878, and very favorable results have been secured, showing that with a continuance of the work under liberal appropriations, the low-water channel of the Mississippi River between St. Paul and the Des Moines Rapids can be made comparatively safe, convenient and permanent. The interests for which the improvement is being made are very large and important. The amount of freight carried during 1890, including the logs and lumber floated in the river, aggregated, approximately, 4,400,000 tons.

The original condition of the channel between the Des Moines Rapids and St. Paul was such, that in low stages the larger boats were unable to proceed farther up the river than La Crosse or Winona; and, in many seasons, at points much farther down their progress was checked or seriously interfered with. In all such cases through freight was reshipped on small and light-draft boats or barges. The originally adopted project for the improvement, which has not been materially changed, proposed the contraction of the channel or water-way by means of wing and closing dams, to such an extent as, by means of the scour thereby caused, to afford a channel of sufficient width and of a depth of 4.5 feet at low water, to be eventually increased to 6 feet. There was expended on the permanent improvement of through navigation to June 30, 1890, the sum of \$2,097,441.64, or \$4,010 per mile. At that date and for several years previous, the condition of the channel was such as to permit the passage of the largest boats at the lowest stages through to St. Paul.

OPERATING AND CARE OF DES MOINES RAPIDS CANAL AND DRY DOCK.

During the past year the Des Moines Rapids Canal was open for navigation 234 days, during which time there passed through it 878 steamboats and 357 barges, carrying 15,801 passengers, 45,217 tons of merchandise, and 364,878 bushels of grain. There also passed through 193,358,089 feet B. M. of lumber, 37,176,150 feet of logs, 87,259,690 shingles, and 59,350,595 laths. The expenses of the year have been \$44,998.20, and the estimates for the coming year amount to \$70,000.

[Extract from the report of Major A. Mackenzie, Corps of Engineers, Officer in charge of the improvement of the Mississippi river between Minneapolis and Des Moines Rapids for 1891.]

Summary of operations of snag boat General Barnard for the fiscal year ending June 30, 1891.

Snags removed.....	271
Leanings trees pulled back.....	69
Leaning trees felled.....	2,130
Wreck removed.....	1
Posts and ring-bolts put in.....	8
Steamboat assisted.....	1
Railroad transfer incline removed.....	1
Miles run.....	4,980

The following table affords a comparative view of the relative amount of navigation at various localities on the Upper Mississippi River for the last three years.

Statement of steamers, barges, and rafts passing various bridges.

Locality of Bridge.	Steamboats.			Barges.			Rafts.		
	1890.	1889.	1888.	1890.	1889.	1888.	1890.	1889.	1888.
Hastings.....	454	769	521	341	590	424	45	72	26
Winona.....	5,417	4,419	4,740	1,045	1,140	684	2,123	1,577	1,894
La Crosse.....	4,738	5,144	5,242	626	513	279	1,926	1,387	1,683
Dubuque.....	3,479	3,221	5,649	1,418	1,149	791	*860	*666	950
Sabula.....	3,244	2,457	2,315	1,275	1,118	927	1,547	1,158	*577
Clinton.....	3,034	2,592	2,627	662	531	405	*538	*653	*365
Rock Island....	3,122	2,607	2,699	650	244	143	843	725	828
Burlington.....	1,750	1,634	1,598	767	799	274	317	268	302
Keokuk.....	1,597	1,717	1,886	635	760	1,344	205	199	245
Quincy.....	1,956	1,899	1,959	807	636	595	278	249	317
Hannibal.....	1,941	1,999	2,125	453	547	234	500	451	315
Louisiana.....	989	1,074	1,110	408	422	278	103	77	92

* Partial record.

Customs revenue and tonnage for the year ending
December 31, 1890.

PORT.	Collections.	Tonnage en-rolled.	Vessels.
St. Louis, Mo.*	\$1,377,767.72	132,946.82	217
Burlington, Iowa.....		1,247.48	10
Dubuque, Iowa.....	11,429.57	5,508.64	26
La Crosse, Wis.....		5,160.85	59
Galena, Ill.....	1.10	3,286.08	32
St. Paul, Minn.....	245,205.89	2,202.99	29
Total	1,734,404.28	150,352.86	373

* Only a part of the St. Louis statement applicable to the Upper Mississippi River.

RIVER NOTES.

In 1890 the river was at a good boating stage until quite late in the season, at no time was the water very low, except in that part of the river above Hastings. Considerable trouble was experienced during the whole season at Nininger, owing to crookedness of channel, and above Burlington for a short time, due to shoal water. Dams built at the latter place caused speedy improvement. There were never less than four feet of water on any bar during the season, except for a few days above Burlington.

In 1891 the river below Hastings maintained a good stage during the spring months and until June 30. Above Hastings, during June, the water has been at a low stage, but no trouble has been experienced, and all boats have run through to St. Paul without difficulty.

STATISTICS OF COMMERCE AND NAVIGATION.

LUMBER.

The most important business connected with the navigation of the Upper Mississippi River and its principal tributaries is the lumber trade, which gave employment in 1890 to about 100 raft boats, valued at \$750,000. Between St. Paul and St. Louis 74 saw mills were operated by 61 wholesale lumber firms, having an invested capital of about \$35,000,000. Their manufactures in 1890 were: Lumber, 1,231,678,960 feet, B. M.; shingles, 508,986,705. In addition to the manufacturers, there are large numbers of retail or distributing firms scattered along the river. In 1888, toward the latter part of the season, was inaugurated on an extensive scale the rafting of logs coming from the river above Minneapolis. This business was continued in 1889 and 1890, and it is thought that it will become larger from year to year as the supply from the Chippewa, St. Croix, and Black diminishes. Prior to 1888 but a comparatively small amount of logs and lumber had been moved in the river between the mouth of the St. Croix and Minneapolis.

STEAMBOATS AND FREIGHT.

The principal steamboat lines on the Upper Mississippi River are the St. Louis, St. Paul and Minneapolis Packet Company, the Diamond Jo Line, and the Eagle Packet Company. There are also many independent boats carrying freight and passengers. During 1890 the amount of freight carried on boats and barges was about 338,023 tons, and the number of passengers, not including those of ferry and excursion boats, was about 124,542. Taking into consideration the logs and lumber floated in the stream, the gross tonnage for 1890 was 4,400,000 tons approximately.

Statement of distribution of lumber manufacture along the Upper Mississippi River from Minneapolis to St. Louis in 1890.

Locality.	Lumber.	Shingles.
	<i>Feet, B. M.</i>	<i>Number.</i>
Minneapolis	296,506,137	156,403,300
Hastings	11,000,000	4,000,000
Prescott	1,500,000	1,000,000
Red Wing	8,500,000	3,000,000
Alma	1,435,000	1,030,000
Winona	145,000,000	83,500,000
LaCrosse	214,028,283	111,166,000
Onalaska	30,867,400	17,446,750
Lansing	20,173,000	10,000,000
Prairie du Chien	14,000,000	4,000,000
Guttenberg	11,000,000	4,394,000
Dubuque	67,300,000	30,800,000
Bellevue	3,090,277	.....
Lyons	72,000,000	18,756,000
Clinton	179,686,000	56,558,000
Fulton	12,000,000	5,655,000
Camanche	11,500,000	3,000,000
Moline	35,000,000	3,000,000
Davenport	95,629,000	17,700,000
Rock Island	83,000,000	18,300,000
Muscatine	97,272,000	50,454,000
Burlington	25,750,000	11,184,755
Fort Madison	21,248,000	22,460,000
Keokuk	13,000,000	7,000,000
Canton	7,000,000	8,530,000
Quincy	6,500,000	2,000,000
Hannibal	25,000,000	7,000,000
St. Louis	16,000,000	7,052,300
Total	1,528,185,097	665,390,105

Statement of amount of Freight received and shipped from St. Louis by the Upper Mississippi River for five years.

St. Louis.		1890	1889	1888	1887	1886
Received		<i>Tons.</i> 128,960	<i>Tons.</i> 113,305	<i>Tons.</i> 114,940	<i>Tons.</i> 132,400	<i>Tons.</i> 140,880
Shipped		22,547	47,560	50,315	36,170	46,190
Total.....		151,507	160,865	165,255	168,570	187,070

Receipts of lumber, logs, etc., at St. Louis, from Upper Mississippi river during 1887, 1888, 1889 and 1890.

Years.	White-pine lumber.	Cottonwood Lumber.	Total Lumber.	Shingles.	Lath.	Pickets.	Total pieces shingles, lath, and pickets.
	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Number.</i>	<i>Number.</i>	<i>Number.</i>	<i>Number.</i>
1890	71,739,010	15,586,800	87,325,810	45,449,150	16,336,650	603,688	62,389,488
1889	71,935,820	11,951,345	83,887,165	43,350,500	21,386,350	401,932	65,138,782
1888	79,311,387	8,734,000	88,045,387	25,743,500	14,650,367	273,744	40,667,611
1887	136,490,066	6,436,000	142,926,066	70,370,735	43,034,705	448,060	113,863,500

1890.

Steamboats and barges from Upper Mississippi River arrived at St. Louis	768
Feet (B. M.) of logs received at St. Louis from Upper Mississippi River by raft, approximately	30,000,000
Steamboats and barges departed from St. Louis for Upper Mississippi River	755

**RECORD OF GAUGE AT GRAFTON, ILL., FOR FISCAL YEAR ENDING
JUNE 30, 1891.**

(Height of water above a plane 200 feet below St. Louis City Directrix.)

Day.	July.	August.	Sept.	Oct.	Nov.	Dec.
1	204.53	195.04	192.68	193.31	195.38	193.23
15	199.03	193.09	193.17	193.13	193.68	190.73
30	195.54	192.98	193.37	195.26	193.23	190.74

Day.	January.	Feb.	March.	April.	May.	June.
1	191.23	191.33	194.50	203.10	203.80	197.53
15	191.49	192.20	193.80	203.05	201.20	196.52
30	191.16	.....	202.88	203.80	197.78	196.30

Standard low water at St. Louis 170.19 feet.

**DEPTH OF WATER, IN FEET, UPON THE BARS BETWEEN ST. LOUIS
AND CAIRO.**

Date.	Stage above stand- ard low water by St. Louis gauge.	Direction.	Quarantine.	Lucas.	Forest Home.	Salt Lake.	Fort Chartres.	St. Genevieve Island.	Liberty Island.	Neely Landing.	Devils Island.	Brewers Point.
1890.	Feet.											
July 5.	15.80	Down.	.....	8	.....	8	.....	10½	8	7½	.....	.....
Aug. 7.	5.30	do.	9	8	.....	9	.....	7	6	9	.....	9½
Sept. 6.	3.90	do.	.....	6	.....	.....	.....	.....	6	.....	.....	.....
Oct. 8.	3.40	do.	.....	.....	.....	.....	7	.....	5½	.....	.....	.....
Nov. 3.	4.20	dd.	.....	10½	.....	.....	7	.....	7	.....	.....	.....
" 8.	3.10	do.	.....	7	.....	.....	7	.....	6	6	.....	.....
Dec. 3.	2.10	do.	.....	7	.....	.....	5½	.....	5½	6	.....	.....
1891.												
Jan. 8.	1.10	do.	6	6	8	7	6	.....	6½	5	.....	.....
Feb. 6.	70	do.	6	5	.....	8	5½	.....	6	5½	.....	.....
Mar. 12.	3.80	do.	.....	9	.....	.....	.....	.....	.....	.....	.....	.....
May 21.	9.40	.....	10	.....	12	.....	.....	.....	.....	.....	.....	.....
June 4.	10.10	.....	12	13½	.....	.....	8	.....	.....	.....	.....	.....

**FREIGHT CHARGES PER TON PER MILE ON THE FOLLOWING TRUNK RAILROADS OF THE UNITED STATES AND ON THE
NEW YORK STATE CANALS, FROM 1870 TO 1889, INCLUSIVE.**

RAILROADS AND CANALS.	1870. Cts.	1871. Cts.	1872. Cts.	1873. Cts.	1874. Cts.	1875. Cts.	1876. Cts.	1877. Cts.	1878. Cts.	1879. Cts.
New York Central Railroad <i>a</i>	1.884	1.649	1.593	1.573	1.462	1.275	1.051	1.014	.914	.80
Pennsylvania Railroad <i>b</i>	1.549	1.389	1.416	1.415	1.255	1.068	.892	.980	.918	.786
New York, Lake Erie and Western <i>a</i>	1.333	1.435	1.526	1.454	1.312	1.209	1.099	.955	.973	.78
Boston and Albany Railroad <i>a</i>	2.193	2.09	2.016	1.958	1.818	1.633	1.288	1.208	1.129	1.11
Philadelphia and Erie <i>b</i>	1.303	1.205	1.192	1.135	.977	.865	.776	.786	.628	.512
Lake Shore and Michigan Southern <i>b</i>	1.504	1.391	1.374	1.335	1.18	1.01	.817	.804	.734	.642
Michigan Central <i>b</i>	1.982	1.747	1.867	1.891	1.569	1.398	1.115	.878	.848	.692
Chicago, Burlington and Quincy <i>b</i>	2.392	2.2	2.076	1.921	1.901	1.889	1.603	1.428	1.247	1.023
Chicago and Northwestern <i>c</i>	3.093	2.869	2.614	2.351	2.226	1.946	1.789	1.702	1.724	1.56
Chicago, Milwaukee and St. Paul <i>b</i>	2.82	2.54	2.43	2.50	2.38	2.10	2.04	2.08	1.80	1.72
Saint Louis, Iron Mountain and Southern <i>b</i>					2.63	2.20	2.05	1.98	1.92	1.88
Chicago, Rock Island and Pacific <i>e</i>		2.64	2.49	2.29	2.07	1.92	1.91	1.71	1.56	1.43
Illinois Central <i>b</i>			2.16	2.20	2.09	1.93	1.80	1.82	1.64	1.52
Chicago and Alton <i>b</i>				1.41	2.124	1.879	1.626	1.447	1.298	1.054
Pittsburg, Fort Wayne and Chicago <i>b</i>					1.26	1.10	.93	1.01	.88	.76
Chesapeake and Ohio										.858
Maine Central										3.32
Mobile and Ohio										2.87
Average on railroads	2.005	1.923	1.896	1.803	1.750	1.554	1.386	1.320	1.401	1.249
New York State canals	.835	1.027	1.016	.887	.743	.968	.679	.564	.42	.46

a Year ending September 30. *e* Year ending March 31.
b Year ending December 31. *f* Tolls abolished,
c Year ending May 31.
d No data.

FREIGHT CHARGES.—CONTINUED,

RAILROADS AND CANALS.	1880. Cts.	1881. Cts.	1882. Cts.	1883. Cts.	1884. Cts.	1885. Cts.	1886. Cts.	1887. Cts.	1888. Cts.	1889. Cts.
New York Central Railroad <i>a</i>	.88	.78	.73	.91	.83	.68	.76	.78	.77	.76
Pennsylvania Railroad <i>b</i>	.88	.799	.817	.819	.740	.73	.755	.73	.634	.686
New York, Lake Erie and Western <i>a</i>	.84	.806	.749	.780	.685	.638	.636	.662	.669	.649
Boston and Albany Railroad <i>a</i>	1.20	1.04	1.07	1.19	1.09	.94	1.10	1.17	1.08	1.02
Philadelphia and Erie <i>b</i>	.56	.55	.62	.62	.58	.50	.52	.54	.519	.52
Lake Shore and Michigan Southern <i>b</i>	.75	.62	.63	.738	.652	.55	.639	.67	.636	.664
Michigan Central <i>b</i>	.842	.718	.77	.83	.65	.56	.686	.694	.694	.726
Chicago, Burlington and Quincy <i>b</i>	<i>d</i>	<i>d</i>	<i>d</i>	<i>d</i>	<i>d</i>	<i>d</i>	<i>d</i>	<i>d</i>	<i>d</i>	<i>d</i>
Chicago and Northwestern <i>c</i>	1.49	1.47	1.43	1.42	1.31	1.19	1.19	1.10	1.02	1.03
Chicago, Milwaukee and Saint Paul <i>b</i>	1.76	1.70	1.48	1.39	1.29	1.28	1.17	1.09	1.01	1.06
Saint Louis, Iron Mountain and Southern <i>b</i>	2.08	1.76	1.60	1.56	1.47	1.41	1.30	1.26	1.22	1.12
Chicago, Rock Island and Pacific <i>c</i>	1.21	1.22	1.28	1.17	1.10	1.40	1.07	1.01	.93	.97
Illinois Central <i>b</i>	1.54	1.52	1.43	1.43	1.37	1.31	1.16	1.09	.96	1.03
Chicago and Alton <i>b</i>	1.206	1.24	1.26	1.13	1.01	1.01	.96	.95	.92	.92
Pittsburg, Fort Wayne and Chicago <i>b</i>	.92	.74	.75	.79	.67	.58	.69	.71	.66	.69
Chesapeake and Ohio.....	.869	.891	.793	.723	.672	.548	.541	.536	<i>d</i>	<i>d</i>
Maine Central.....	2.74	2.74	2.75	2.42	.239	2.46	2.17	2.33	2.10	2.03
Mobile and Ohio.....	2.20	2.06	2.15	2.28	1.97	1.70	1.51	1.32	1.01	.96
Average on railroads.....	1.292	1.215	1.188	1.188	1.087	1.028	.992	.974	.926	.928
New York State canals.....	.49	.38	.43	<i>f</i>	<i>f</i>	<i>f</i>	<i>f</i>	<i>f</i>	<i>f</i>	<i>f</i>

a Year ending September 30. *c* Year ending May 31. *e* Year ending March 31.
b Year ending December 31. *d* No data. *f* Tolls abolished.

TABLE XII.

FREIGHT RATES FROM ST. LOUIS.

Rates of Freight by River to Memphis, Vicksburg and New Orleans,
during 1891.

DATE.	Flour and Meal. per bbl.			Pork, per bbl.			Grain and Bran, per 100 lbs.			Hay, per 100 lbs.		
	Memphis.	Vicksburg.	New Orleans.	Memphis.	Vicksburg.	New Orleans.	Memphis.	Vicksburg.	New Orleans.	Memphis.	Vicksburg.	New Orleans.
Jan. 1 to April 4.....	20	40	30	30	52½	45	10	17½	15	12½	20	17½
April 4 to Aug. 1.....	20	35	30	30	52½	45	10	17½	15	12½	20	17½
Aug. 1 to Sept. 19.....	20	35	35	30	52½	52½	10	17½	17½	17½	20	20
Sept. 19 to Nov. 28.....	30	40	35	45	60	52½	15	20	17½	17½	22½	20
Nov. 28 to Dec. 31.....	40	50	40	60	75	60	20	25	20	22½	27½	22½

RATE ON BULK CORN

BY BARGES, ST. LOUIS TO NEW ORLEANS DURING 1891.

January and February.....	7	cents per bushel.
March.....	6	" "
April.....	5½	" "
May and June.....	5	" "
July.....	5½	" "
August.....	6	" "
September.....	7	" "
October, November and December.....	7½	" "

Wheat, ½ cent per bushel more than Corn.

All Rail rates on Grain, St. Louis to New York during 1891, 29 cents per 100 pounds.

All Rail rates, St. Louis to New Orleans, 1891, Grain, per 100 pounds, 20 cents.

**UPPER MISSISSIPPI RIVER RATES.
FROM ST. LOUIS**

TO	MERCHANDISE. In Cts. per 100 lbs.				CAR LOADS. In Cents per 100 pounds.				
	1st Class.	2d Class.	3d Class.	4th Class.	5th Class.	Class A.	Class B.	Class C.	Class D.
Rock Island.....	32	25	18	13	11	12	10	9	8
Dubuque.....	35	27	20	15	11	12	10	9	8
St. Paul.....	45	35	28	18	15	19	15	13	11

ALL RAIL RATES.

FROM	TO	MERCHANDISE. In Cents per 100 lbs.				CAR LOADS. In Cents per 100 pounds.				
		1st Class.	2d Class.	3d Class.	4th Class.	5th Class.	Class A.	Class B.	Class C.	Class D.
St. Louis.....	Rock Island	46.43	36.84	28.57	20	15	14.9	13.44	11.04	8.74
	Dubuque.....	47	37	29	20	15	15	13.5	11.5	9
	St. Paul.....	63	52½	42	26	21	26	21	18	15

**OFFICIAL ANNUAL STATEMENT OF LAKE AND CANAL RATES,
Buffalo, December 4, 1890.**

DATE.	WHEAT.		CORN.	
	Lake Rates per bushel, from Chicago to Buffalo.	Canal Rates per bushel, from Buffalo to New York.	Lake rates per bushel, from Chicago to Buffalo.	Canal rates per bushel, from Buffalo to New York.
	Cts.	Cts.	Cts.	Cts.
May 31.....	1.69	3.98	1.41	3.59
June 30.....	2.20	3.75	1.91	3.35
July 31.....	2.26	3.63	1.95	3.13
August 31.....	1.50	3.92	1.25	3.43
September 30.....	1.88	3.93	1.62	3.43
October 31.....	1.98	4.02	1.72	3.52
November 30.....	2.16	3.86	1.97	3.30
Average.....	1.95	3.87	1.69	3.39

I certify the above statement to be correct.

WM. C. O'NEIL,

Collector of Statistics.

BUFFALO, ERIE CO., N. Y., December 4, 1889.

Carload rates, in cents per 100 pounds, as reported upon the first day of each month during the year 1890, from Missouri River points to Chicago and St. Louis:

Months.	TO CHICAGO FROM															
	Kansas City, Atchison and St. Joseph.								Omaha.							
	Packing house products.	Dressed meats.	Flour.	Wheat.	Other grain.	Cattle.	Sheep.	Hogs.	Packing house products.	Dressed meats.	Flour.	Wheat.	Other grain.	Cattle.	Sheep.	Hogs.
Jan. 1.....	18 23½	22½	22½	20	9½	22	25	18 23½	25	25	20	25	25	25	25	25
Feb. 1.....	18 18½	22½	22½	20	12½	22	25	18 23½	25	25	20	25	25	25	25	25
March 1....	18 18½	22½	22½	20	12½	22	25	18 23½	25	25	20	25	25	25	25	25
April 1.....	18 18½	22½	22½	20	12½	22	25	18 23½	25	25	20	25	25	25	25	25
May 1.....	12 18½	22½	22½	20	12½	22	25	12 23½	25	25	20	*25	*25	*25	*25	*25
June 1.....	12 18½	22½	22½	20	*12½	*22	*22	12 18½	25	25	20	21	22	25	25	25
July 1.....	12 18½	22½	22½	20	18	*22	25	12 18½	25	25	20	21	22	25	25	25
Aug. 1.....	12 18½	22½	22½	20	12½	22	22	12 18½	25	25	20	21	22	25	25	25
Sept. 1.....	18 23½	22½	22½	20	22	25	25	18 23½	25	25	20	22	25	25	25	25
Oct. 1.....	18 23½	20	†20	†17	22	25	25	18 23½	20	†20	†17	22	25	25	25	25
Nov. 1.....	18 23½	20	†20	†17	22	25	25	18 23½	20	†20	†17	22	25	25	25	25
Dec. 1.....	18 23½	20	†20	†17	22	25	25	18 23½	20	†20	†17	22	25	25	25	25

*Rebate of \$7.35 per car, regardless of dimensions. †Wheat, Rye and Barley. ‡Corn and Oats.

Months.	TO ST. LOUIS FROM															
	Kansas City, Atchison and St. Joseph.								Omaha.							
	Packing house products.	Dressed meats.	Flour.	Wheat.	Other grain.	Cattle.	Sheep.	Hogs.	Packing house products.	Dressed meats.	Flour.	Wheat.	Other grain.	Cattle.	Sheep.	Hogs.
Jan. 1.....	13 18½	17½	17½	15	18	14½	21½	13 18½	20	20	15	16½	17½	17½	17½	17½
Feb. 1.....	13 13½	17½	17½	15	13½	14½	21½	13 18½	20	20	15	16½	17½	17½	17½	17½
March 1..	13 13½	17½	17½	15	7½	14½	21½	13 18½	20	20	15	16½	17½	17½	17½	17½
April 1....	13 13½	17½	17½	15	9½	14½	21½	13 18½	20	20	15	16½	17½	17½	17½	17½
May 1.....	7 13½	17½	17½	15	9½	14½	21½	7 18½	20	20	15	*16½	*17½	*17½	*17½	*17½
June 1 ...	7 13½	17½	17½	15	*9½	*14½	*13	7 13½	20	20	15	12½	14½	17½	17½	17½
July 1.....	7 13½	17½	17½	15	7½	*14½	21½	7 13½	20	20	15	12½	14½	17½	17½	17½
Aug. 1	12 13½	17½	17½	15	7½	14½	21½	7 13½	20	20	15	12½	14½	17½	17½	17½
Sept. 1 ...	13 18½	17½	17½	15	18½	21½	21½	13 18½	20	20	15	13	17½	17½	17½	17½
Oct. 1.....	13 18½	15	†15	†12	13½	17½	15	13 18½	15	†15	†12	13	17½	17½	17½	17½
Nov. 1	13 18½	15	†15	†12	18½	21½	21½	13 18½	15	†15	†12	13	17½	17½	17½	17½
Dec. 1	13 18½	15	†15	†12	13½	17½	15	13 18½	15	†15	†12	13	17½	17½	17½	17½

*Rebate of \$4.80 per car, regardless of dimensions. †Wheat, Rye and Barley. ‡Corn and Oats.

**QUANTITIES OF GRAIN, FLOUR AND MEAL RECEIVED AT THE PORTS
NAMED BELOW EACH YEAR FROM 1883 TO 1890, INCLUSIVE.**

(From annual reports of New York Produce Exchange.)

PORTS.	1883. Bushels.	1884. Bushels.	1885. Bushels.	1886. Bushels.
New York:				
By canal, via river.....	41,220,908	37,925,257	29,930,587	44,036,522
Coastwise and river....	3,725,238	2,417,962	3,738,304	2,132,370
By rail.....	79,390,091	75,076,847	92,968,540	84,741,170
Total New York.....	124,336,237	115,420,066	126,637,431	130,910,062
Portland, Me.....	3,200,506	7,934,194	6,563,916	5,867,150
Boston.....	37,527,022	34,520,298	31,166,369	35,769,884
Philadelphia.....	22,333,384	20,339,131	23,189,449	21,314,992
Baltimore.....	35,847,124	33,119,610	34,299,861	38,772,444
New Orleans.....	18,373,230	12,981,300	11,305,012	12,799,283
Total United States, Atlantic ports.....	241,617,505	224,314,599	233,162,038	245,433,815
Montreal, Canada.....	18,096,455	17,554,523	15,814,616	21,098,527

PORTS.	1887. Bushels.	1888. Bushels.	1889. Bushels.	1890. Bushels.
New York:				
By canal, via river.....	46,011,000	34,921,275	33,995,895	30,185,400
Coastwise and river....	1,414,708	3,474,619	2,436,407	1,609,551
By rail.....	80,075,096	68,556,476	76,118,054	90,218,719
Total New York.....	127,500,804	106,952,370	112,550,356	122,013,670
Portland, Me.....	6,398,824	5,999,878	8,069,901	6,649,636
Boston.....	31,921,497	29,401,549	30,189,053	30,815,742
Philadelphia.....	25,038,809	17,158,523	18,460,942	35,214,826
Baltimore.....	39,252,205	30,275,840	42,349,047	46,435,135
New Orleans.....	16,853,936	12,030,865	20,812,159	21,575,442
Total United States, Atlantic ports.....	246,966,075	200,919,025	232,431,458	262,704,451
Montreal, Canada.....	19,891,891	14,018,520	17,659,337	17,444,966

NOTE.—Receipts at New York, Portland, Boston, Philadelphia and Baltimore include shipments from the West to foreign countries through these ports on through bills of lading. Receipts at Portland via Montreal are duplications of receipts reported at Montreal. Receipts at Baltimore include flour ground by city millers (526,191 barrels in 1890) and exported. Receipts at New Orleans do not include shipments of oats and corn through that port to foreign countries on through bills of lading.

Grain embraces flour as wheat, corn, rye, oats, barley, malt and pease.

FREIGHT RATES ON THE GREAT LAKES.

EFFECT OF DEEP WATER IMPROVEMENTS ON RAILROAD RATES.

WASHINGTON, January 30, 1892.

A large delegation of representatives of the Deep Water-way Convention held in Detroit in December last, was given a hearing to-day before the House Committee on Rivers and Harbors and the Senate Committee on Commerce, in joint session.

The purpose of the delegation was to urge the construction and maintenance of a 21-foot channel from the head of Lake Superior through the various connecting links between the great lakes and through the Erie Canal to the sea. Geo. H. Ely of Cleveland, O., opened proceedings with the reading of the published memorial of the convention on the subject.

Mr. Ely said the principal object was to secure authorization of contracts for 21 feet of water from Duluth to Buffalo. The estimated cost was only \$3,394,000. It would take four to six years to do the work, and the cost would run through that period. There were six places at which improvements were necessary, viz: Round Island, the head of St. Mary's River, Sailors' Encampment, St. Clair flats, the mouth of the Detroit River, the foot of Lake Huron. The work was all mud-dredging. The effect of water rates over the lakes was to greatly reduce railway rates throughout the company. The average cost of transportation from Duluth to Buffalo by water, a distance of 800 miles, was 1 3-10 mills per ton per mile, against an average of 9 mills on all the railways, and the lowest rate on the Pennsylvania road of 4½ mills per ton per mile. An additional depth of water would still further greatly reduce the water rate.

S. A. Thompson, secretary of the Duluth Chamber of Commerce, stated that in the last ten or twelve years, railways had reduced the rate of transportation of a bushel of wheat from Chicago to New York from 42 cents to 14 cents, the water rate had been reduced from 25 cents to 4.55 cents. The rate of the Erie Canal was about .2 of a cent per ton per mile. The lowest average railway rate was 4½ mills, and the actual cost on the Lake Shore was 4 mills, and on the Grand Trunk 5 mills.

The total expenditures on improvement of the great lakes had been less than \$30,000,000. The saving in the last year due to lake transportation was \$150,000,000 more than the cost of the improvements. All that had been accomplished in the past by giving 16 feet of water would not only be duplicated but enhanced tenfold by the expenditure of something over \$3,000,000 to secure a depth of 20 feet, Canada had spent almost \$60,000,000 upon her water-ways. In side of five years there would be a clear water-way of 14 feet through Canada from the head of Lake Superior to the Atlantic. There was not enough sentiment in trade to send wheat to Europe by American vessels at 25 cents when Canadian vessels would carry it for 10 cents. Mr. Thompson said the lakes and the Erie Canal controlled New York Central rates, which road's rates, the Pennsylvania, 150 miles south, had to meet. This road in turn controlled the Baltimore and Ohio rates, and thus to a greater or less extent lake rates governed rates to the Gulf. When the Erie Canal was open, the railroads put wheat rates from Chicago to New York down below cost of transportation to $8\frac{1}{2}$ cents a bushel, and compelled many canal boats to tie up. The day that winter conditions set in the railroads jumped to $7\frac{1}{2}$ cents.

COST OF KEEPING THE RHINE NAVIGABLE.

Report by Consul Monaghan, of Mannheim.

The greatness of the Germans consists in their perservering attention to little things. They act upon the belief that God helps those who help themselves, for they are never tired and never done helping themselves and each other. They make the best and most of what they have got, and are never done trying to get more. The German is a yearner. He looks longingly out along the thirty-two points of the compass, and wishes he had lines of ships running along each line; and he will, if left long enough alone. Not the ocean alone, but the rivers are objects of his care. One river, the Rhine, he navigates for nearly 300 miles, and is cudgeling his brain over plans to make it navigable as far as Kehl or Strasburg (I mean for steamers; it is already navigable for barges). To keep this stream in bounds and navigable Alsace and Lorraine expended since

1841, the period when those states entered into an agreement with Baden to correct the current, down to 1889, 35,282,832 marks, or \$8,500,000; and since 1852, the period when the Rhine began first to bring destruction by overflowing of its banks, 3,565,548 marks for dikes. Baden paid for correction and keeping the current in order, since 1838 to 1898, 45,544,220 marks; for dikes and flood preventors since 1840, 3,354,667 marks. For the harbor of Mannheim alone the state has (profitably) paid 18,485,837 marks, and for the small harbor 1,749,471 marks.

Bavaria, Baden's neighbor, on the left bank as you descend, has paid out, from 1840 to 1888, 7,288,903 marks; while the Palatinate villages, towns and communities have put out for dikes and protective measures, 4,313,389 marks. Ludwigshafen's harbor, just across the Rhine from that of Mannheim, cost 2,000,000 marks of the Bavarian state money.

Hessen, further down, put out a total, including costs for running the department having control of the Rhine waters and the dike building where the river runs through Hessen, from 1824 to 1887-'88, 10,892,975 marks.

Prussia, which takes up the Rhine where Hessen lets go of it, put out, from 1840 to 1889-'90, 42,119,548 marks. Besides this sum, she spent for "havens of safety" at Rüdesheim, Lorely, Oberwinter, Oberlahnstein and Emmerich, 1,300,000 marks. These huge sums do not include either the costs of keeping the walls, wharves and breakwaters, nor for protecting the enormous amounts put out to extend the harbors of Ruhrort and Hochfelden. These figures show, if they show any thing, that the Germans find it more than worth while to make and keep their river navigable. It would be a very interesting study to find out how much has been expended, not on the Rhine alone, but on the Elbe, Oder, Main (a year or two ago a magnificent harbor was opened at Frankfort), and Weser, to say nothing of the hundred smaller streams, water-ways and canals.

J. C. MONAGHAN, Consul.

UNITED STATES CONSULATE,

Mannheim, December 2, 1889.

**Traffic Statement of the Des Moines Rapids Canal for the fiscal year
ending June 30th, 1891.**

Month.	Boats Up.	Boats down.	Baggage up and down.	Passen- gers.	Mer- chan- dise.	Grain.
1890.					Tons.	Bushels
July	103	60	65	5,904	14,823	51,450
August	71	67	48	3,637	3,774	29,255
September	59	58	20	1,104	2,645	74,140
October	60	51	32	288	3,364	33,562
November	32	23	25	13	750	7,000
1891.						
April	33	9	35	75	3,517	3,375
May	88	37	73	909	11,351	98,399
June	63	59	59	3,871	4,993	67,697
Total	514	364	357	15,801	45,217	364,878

Month.	Lumber.	Logs.	Shingles.	Laths.	Lockage at one lock.
1890.	Feet.	Feet.	Number.	Number.	
July	12,102,764	1,500,000	4,975,750	3,469,595	234
August	35,637,375	6,960,000	13,824,500	8,776,465	322
September	54,572,321	9,260,000	26,269,750	17,039,385	372
October	35,794,990	6,371,150	16,153,500	11,743,995	302
November	8,775,000	4,000,000	3,680,000	2,550,000	112
1891.					
April	900,000				81
May	2,068,000	1,000,000		1,000,000	157
June	43,507,639	8,085,000	23,256,190	14,771,155	315
Total	193,358,069	37,176,150	87,259,690	59,350,695	1,895

Dates of opening and closing of Canal for all years since its opening to Navigation.

Year.	Canal opened.	Canal closed.	River opened.	River closed.	Highest water.		Lowest water.	
					Date.	Feet.	Date.	Feet.
1877...	Aug. 22	Dec. 10	Feb. 17	Dec. 10	Feb. —	20.55	Sept. —	0.65
1878...	Mar. 8	Nov. 28	Open.	Dec. 20	June 11	12.05	Sept. 22	1.45
1879...	Mar. 17	Dec. 9	Mar. 6	Dec. 26	June 2	8.45	Oct. 4	1.00
1880...	Mar. 8	Nov. 19	Jan. 5	Dec. 8	June 29	17.50	Aug. 24	2.05
1881...	Apr. 16	Oct. 17	Mar. 25	No close	Oct. 29	18.95	Aug. 29	2.75
1882...	Mar. 6	Nov. 25	Open.	Dec. 15	Apr. 25	15.90	Oct. 5	2.65
1883...	Apr. 13	Dec. 6	Mar. 1	Dec. 27	May 8	15.45	Sept. 22	2.10
1884...	Apr. 1	Nov. 23	Mar. 15	Dec. 30	Mar. 31	16.80	Aug. 25	2.80
1885...	Apr. 1	Nov. 24	Mar. 14	Dec. 14	Mar. 15	12.80	Nov. 30	3.40
1886...	Apr. 1	Nov. 21	Mar. 15	Dec. 2	May 6	15.95	Dec. 1	0.50
1887...	Mar. 28	Nov. 23	Feb. 11	Dec. 21	Feb. 12	11.60	Nov. 28	0.00
1888...	Mar. 29	Nov. 22	Mar. 1	No close	May 16	19.65	Dec. 26	—0.80
1889...	Mar. 18	Nov. 23	Mar. 3	Feb. 24	Feb. 26	10.75	Dec. 5	—0.70
1890...	Apr. 1	Nov. 20	Jan. 28	Jan. 21	June 30	12.60	Jan. 8	—2.49
1891...	Apr. 1	.....	Open.	.....	.....	.....	.....	.....

Comparative traffic statement showing the total traffic that has passed through the canal since its opening in 1877,
by fiscal years ending June 30.

Fiscal year.	Steam- boats.	Barges.	Passen- gers.	Merchan- dise.	Grain.	Lumber.	Logs.	Laths.	Shingles.	Lockage at one lock.
				Tons.	Bushels.	Feet.	Feet.	Number.	Number.	
1878.....	670	548	.....	53,346	737,415	25,000,000	8,086,000	4,000,000	3,700,000	824
1879.....	802	464	5,008	64,968	2,192,642	33,347,612	13,160,960	8,721,796	11,749,000	1,564
1880.....	967	651	13,231	78,989	2,197,469	21,832,478	11,013,410	27,863,640	30,561,000	2,497
1881.....	840	276	10,003	44,962	1,154,082	52,256,235	4,475,000	11,657,655	15,091,000	1,339
1882.....	760	444	8,588	29,043	781,817	17,150,011	1,040,000	3,112,825	4,885,250	2,292
1883.....	1,107	705	9,192	43,359	729,174	13,093,325	1,040,000	11,558,000	4,435,000	1,353
1884.....	913	245	13,057	54,215	470,680	57,018,151	9,399,764	15,924,645	25,182,250	1,908
1885.....	889	169	13,065	54,120	776,432	43,119,797	2,779,670	13,473,205	25,018,750	1,270
1886.....	784	218	22,221	56,001	465,681	22,769,823	3,195,360	4,302,800	8,253,000	755
1887.....	990	318	20,797	52,815	366,432	178,764,876	24,827,000	19,961,781	90,450,922	1,717
1888.....	595	235	8,330	33,160	143,037	166,827,752	34,505,000	83,642,450	49,848,840	1,749
1889.....	1,022	288	22,880	50,008	381,559	118,508,045	26,333,320	50,221,099	37,413,810	1,941
1890.....	924	477	14,529	71,453	397,788	146,078,329	26,689,300	44,316,167	73,540,370	1,927
1891.....	878	357	15,801	45,217	364,878	193,358,089	37,176,150	59,350,595	87,259,690	1,895

**ANNUAL AVERAGE FREIGHT RATES PER BUSHEL OF WHEAT
FOR TRANSPORTATION FROM CHICAGO TO NEW YORK FOR EACH
YEAR FROM 1857 TO 1890, INCLUSIVE.**

[Prepared by Mr. J. C. Brown, Statistician New York Produce Exchange.]

Calendar year.	Average rates per bush'l.			Calendar Year.	Average rates per bush'l.		
	By lake and canal. <i>a</i>	By lake and rail.	By all rail.		By lake and canal. <i>a</i>	By lake and rail.	By all rail.
	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>		<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>
1857.....	25.29			1874.....	14.10	16.9	28.7
1858.....	16.28			1875.....	11.43	14.6	24.1
1859.....	17.59			1876.....	9.58	11.8	16.5
1860.....	24.83			1877.....	11.24	15.8	20.3
1861.....	26.55			1878.....	9.15	11.4	17.7
1862.....	26.33			1879.....	11.60	13.3	17.3
1863.....	22.91			1880.....	12.27	15.7	19.9
1864.....	28.36			1881.....	8.19	10.4	14.4
1865.....	26.62			1882.....	7.89	10.9	14.6
1866.....	29.61			1883.....	8.37	11.5	16.5
1867.....	22.36			1884.....	6.31	9.55	13.125
1868.....	22.79	29.0	42.6	1885.....	5.87	9.02	14.00
1869.....	25.12	25.0	35.1	1886.....	8.71	12.00	16.50
1870.....	17.10	22.0	33.3	1887.....	8.51	12.00	16.33
1871.....	20.24	25.0	31.0	1888.....	5.93	11.00	14.50
1872.....	24.47	28.0	33.5	1889.....	6.89	10.70	15.00
1873.....	19.19	26.9	33.2	1890.....	5.85	8.50	14.31

a Including canal tolls until 1882, but not Buffalo transfer charges.

b Averages of officially published tariffs.

**ANNUAL AVERAGE CANAL FREIGHT RATES ON WHEAT AND
THE TOLLS ON WHEAT FROM BUFFALO TO NEW YORK, AND THE
ELEVATING AND STORAGE RATES AT BUFFALO FOR EACH
YEAR FROM 1870 TO 1890, INCLUSIVE.**

[Prepared by Mr. Wm. Thurstone, Sec'y of the Buffalo Merchants' Exchange.]

Year.	Average canal freight rates.	Tolls.	Elevat'g, includ'g storage. <i>a</i>	Year.	Average canal freight rates.	Tolls.	Elevat'g, includ'g storage. <i>a</i>
	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>		<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>
1870.....	11.2	3.1	1.25	1881.....	4.7	1	.875
1871.....	12.6	3.1	1.25	1882.....	5.4	1	.875
1872.....	13	3.1	1.25	1883.....	4.9		.875
1873.....	11.4	3.1	1.25	1884.....	4.2		.875
1874.....	10	3.1	1.25	1885.....	3.8		.875
1875.....	7.9	2	1	1886.....	5		.875
1876.....	6.6	2	1	1887.....	4.5		.875
1877.....	7.4	1	1	1888.....	3.4		.875
1878.....	6	1	1	1889.....	4.8		.875
1879.....	6.8	1	1	1890.....	3.8		.875
1880.....	6.5	1	1				

a Storage varied; 5 to 10 days the limit.

**ANNUAL AVERAGE THROUGH FREIGHT RATES ON GRAIN, FLOUR AND PROVISIONS (PER 100 POUNDS) FROM
CHICAGO TO EUROPEAN PORTS, BY ALL RAIL TO SEABOARD AND THENCE BY STEAMERS,
FROM 1880 TO 1890.**

[Prepared by Secretary of the Board of Trade, Chicago.]

SHIPPED TO—		1880.	1881.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
		Dolla.	Dolla.	Dolla.	Dolla.	Dolla.	Dolla.	Dolla.	Dolla.	Dolla.	Dolla.
Liverpool	Grain	.4922	.3718	.3647	.4428	.2943	.3672	.3487	.3490	.3958	.3187
	Sacked flour	.5433	.3490	.4030	.2982	.2887	.3420	.3491	.3371	.4162	.3625
Do	Provisions	.6871	.4670	.5183	.4674	.3508	.4415	.4073	.3747	.5746	.5109
	Grain	.....	.3932	.....	.2641	.3228	.3910	.3705	.3605	.4075	.3550
Glasgow	Sacked Flour	.5651	.4400	.....	.2811	.3443	.3951	.3868	.3579	.4425	.4188
	Do	.6732	.5361	.....	.4789	.4086	.5329	.4855	.4658	.6142	.5838
London	Grain	.....	.3620	.....	.2783	.2921	.4086	.3545	.3902	.....	.3550
	Sacked Flour	.....	.4276	.....	.3825	.3171	.4021	.3784	.3776	.....	.4047
Do	Provisions	.....	.5550	.....	.4891	.4046	.5471	.4781	.4570	.6196	.5813
	do	.7385	.5708	.6295	.5373	.4327	.5219	.4981	.4472	.6084	.4688
Antwerp	do	.....	.5471	.....	.5434	.3842	.5154	.5229	.5426	.6262	.5250
Amsterdam	do	.....	.....	.6883	.5434	.4383	.5562	.5525	.5426	.6500	.5000
Rotterdam	do	.....	.....	.6683	.4354	.4383	.5562	.5508	.5426	.6500	.5000
Copenhagen	do	.....	.....	.....	.5434	.4951	.5169	.5508	.5483	.6492	.5813
Stockholm	do	.....	.....	.8255	.5908	.5468	.5543	.5865	.6671	.7500	.6094
Stettin	do	.....	.....	.7420	.5422	.5210	.5833	.5508	.5483	.6492	.6813
Bordeaux	do	.....	.....	.6432	.5603	.5066	.5708	.6031	.5831	.7491	.6850

**ANNUAL AVERAGE FREIGHT RATES ON GRAIN AND FLOUR
FROM ST. LOUIS TO VARIOUS POINTS DURING EACH YEAR FROM 1876
TO 1890, INCLUSIVE.**

[Prepared by Mr. Geo. H. Morgan, Sec'y Merchants' Exchange, St. Louis, Mo.]

Calendar Year.	To New Orleans by river.		To New York by rail.		To Liverpool.	
	On Grain in sacks per 100 pounds.	On Wheat in bulk by barges per bushel.	On Wheat per 100 pounds.	On Flour per barrel.	Via New Or- leans on Wheat per bushel.	Via New York on Wheat per bushel.
	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>
1876			39.5	79		
1877	21	8.5	41	82		
1878	17.5	7.25	38	76		
1879	18	7.75	33.5	67		
1880	19	8.25	42	84		
1881	20	6	32	64		
1882	20	6 $\frac{1}{2}$	29.5	59	22 $\frac{3}{4}$	23 $\frac{3}{4}$
1883	17.75	5.5	33	66	19 $\frac{1}{2}$	27
1884	14	6.625	26	52	14 $\frac{1}{4}$	21.25
1885	15	6.4	22 $\frac{1}{2}$	44 $\frac{1}{2}$	15 $\frac{1}{2}$	20.5
1886	16	6.5	29	58	16 $\frac{1}{2}$	24
1887	18	6.5	32.125	64.25	14.8	24.8
1888	15	6.5	29 $\frac{1}{2}$	59	15 $\frac{1}{2}$	22.95
1889	17.93	5.95	28 $\frac{1}{2}$	58	17 $\frac{1}{2}$	24.97
1890	15.66	6.58	27 $\frac{1}{2}$	52 $\frac{1}{2}$	14 $\frac{1}{2}$	21.48

a The figures, 29 $\frac{1}{2}$, represent published rates. At times during the year the rate was cut to 20 cents, making the average rate on that basis, St. Louis to Liverpool, via New York, as low as 17 $\frac{1}{2}$ cents per bushel.

b On all grain, except corn, on which rate was 26 cents.

NOTE.—The Interstate Commerce Commission, at this date, June 24, 1891, states that the freight rates on grain and flour, per 100 pounds, are as follows:

	<i>Cents.</i>
From Chicago to New York	25
From Chicago to Boston	30
From Chicago to Philadelphia	23
From Chicago to Baltimore	22
From St. Louis to New York	29
From St. Louis to Boston	34
From St. Louis to Philadelphia	27
From St. Louis to Baltimore	26

and that rates on traffic from St. Louis and Chicago to Boston for export are the same as above to New York. To other points rates shown above apply alike on local and export traffic.

COMMERCIAL STATISTICS.

**RECEIPTS AND SHIPMENTS AT ST. LOUIS, MO., DURING THE YEARS
1888, 1889 AND 1890.**

	1888, tons	1889, tons.	1890, tons.
Receipts and shipments at St. Louis	1,238,925	1,384,385	1,265,592
Transferred by ferries at St. Louis	2,351,881	2,717,760	3,052,166
Shipped from Landings between St. Louis and Cairo	37,257	29,209	34,267
Total	3,628,063	4,131,354	4,352,025

Note.—Increase of 220,671 tons for year 1890 over 1889.

ARRIVALS AND DEPARTURES OF STEAMBOATS AND BARGES AT ST. LOUIS, DURING THE YEARS 1888, 1889, 1890.

	Arrivals.			Departures.		
	1888.	1889.	1890.	1888.	1889.	1890.
Steamboats	2,079	2,195	1,927	2,076	2,211	1,910
Barges	1,244	1,474	1,274			

THE MISSISSIPPI VALLEY, ITS AREA AND ITS CAPACITY FOR POPULATION.

[Extract from a speech delivered by P. G. Kelsey, Esq., at the Western Water-Ways Convention, at Evansville, Ind., October 14 and 15, 1891.]

"The delegates here to-day from the states in the Mississippi Valley represent a territory greater than all the countries of Europe, leaving out Russia. The Austrian Empire covers an area of 240,943 square miles. The states of Minnesota, Wisconsin, Iowa and Michigan cover a greater area by 8,008 square miles.

"Great Britain, Ireland and Scotland cover an area of 151,565 square miles. The states of Illinois, Indiana, Ohio, West Virginia and the western part of Pennsylvania exceed her majesty's domains by 25,623 square miles.

"The German Empire covers 212,091 square miles. The two Dakotas, with Nebraska, are greater by 14,836 square miles.

"France covers an area of 204,091 square miles, less by 11,141 square miles than the states of Missouri, Kansas and Indian Territory.

"Spain and Sweden combined cover an area of 345,823 square miles, less by 2,072 square miles than the states of Montana, Wyoming and Colorado.

"Italy and Norway cover an area of 236,576 square miles, while the state of Kentucky, Tennessee, Mississippi, Arkansas and Louisiana cover an area of 231,830 square miles.

"To bring them within the valley actually drained by the Mississippi River, Greece, Switzerland, Denmark, Belgium, Portugal, the Netherlands, and Montenegro, comprising seven kingdoms, could almost hide themselves in the chapparel along the Texas border. Russia was not included in the comparison, but all the other Nations combined would require a liberal border made of Russian territory to make a spread large enough to cover the Mississippi Valley.

"The population of Europe, including European Russia, may be stated at 340,000,000. The population of Great Britain per square mile is 200. Since the Mississippi River drains an area of 1,500,000 square miles, when our population shall equal that of Great Britain per square mile, we shall have in this valley over 400,000,000 of people. Think of it! But the population of Belgium is 428 to the square mile, at which average a population of over 700,000,000 could find homes in the Mississippi Valley." Applause.



